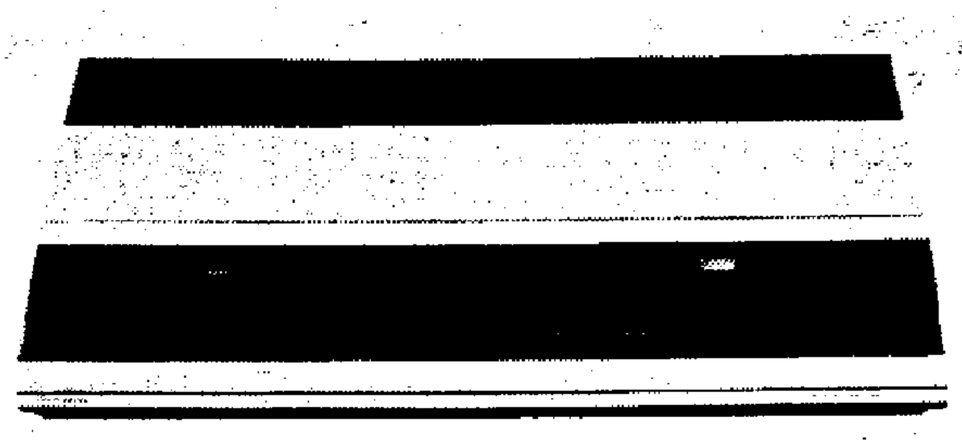
Bang & Olufsen



BEOCORD 2000

Type 2921-2922-2923-2925

SERVICEANVISNING
SERVICE MANUAL

INDHOLD

Diagrammer	1	1
Halvledere	2	2
Elektrisk stykliste	3	3
Mekanisk stykliste	4	4
Mekaniske justeringer	5	5
Elektriske justeringer	6	6
Tekniske data	7	7
Adskillelse	8	8
Isolationstest	9	9
Servicetips/Modifikationer	10	10

CONTENTS

Circuit diagrams	1	1
Semi-conductors	2	2
List of electrical parts	3	3
List of mechanical parts	4	4
Mechanical adjustments	5	5
Electrical adjustments	6	6
Technical specifications	7	7
Disassembly	8	8
Insulation test	9	9
Service tips/Modifications	10	10

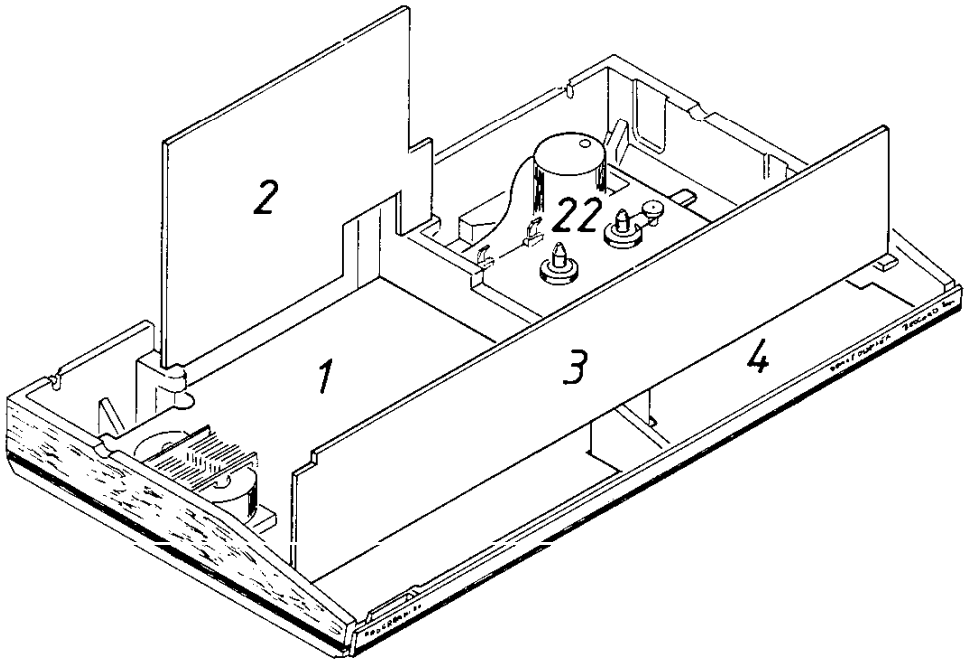
1 Signal and Control

2 Dolby and Secondary Operation

3 Operation

4 Touch

22 Tape Deck



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MÅLEBETINGELSER

Alle DC spændinger er målt i forhold til stel, med voltmeter med en indgangsmodstand på 10 Mohm.
Oscillogrammer og AC spændinger er målt i forhold til stel med oscilloscop eller voltmeter med en indgangsmodstand på 1 Mohm.
Spændingerne er målt ved pegel niveau (333 Hz 250 pWb mm) og Dolby NR OFF.
AC spændinger opgivet i millivolt (mV). Eks. 660 mV.
DC spændinger opgivet i volt (V). Eks. 0,7 V.
Signalvejen i optage position er vist i venstre kanal og gengive position er vist i højre kanal.

MEASURING CONDITIONS

All DC voltages have been measured in relation to ground with voltmeter with an input resistance of 10 Mohms.
Oscillograms and AC voltages have been measured in relation to ground with oscilloscope or voltmeter with an input resistance of 1 Mohm.
Voltages are measured at playback level (333 Hz 250 pWb mm) and Dolby NR OFF.
AC voltages stated in millivolts (mV). Ex.: 660 mV.
DC voltages stated in volts (V). Ex.: 0.7 V.
The signal path in recording pos. is shown in left channel, and replay pos. is shown in right channel.

MESSBEDINGUNGEN

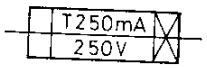
Alle DC Spannungen sind im Verhältnis zu Masse, mit Voltmeter mit ein Eingangswiderstand von 10 Mohm gemessen.
Oszillogramme und AC Spannungen sind im Verhältnis zu Masse, mit Oszilloskop oder Voltmeter mit einem Eingangswiderstand von 1 Mohm gemessen.
Die Spannungen sind bei Pegelniveau (333 Hz 250 pWb mm) und Dolby NR OFF gemessen.
AC Spannungen in Millivolt (mV) aufgegeben, z.B.: 660 mV.
DC Spannungen in Volt (V) aufgegeben, z.B.: 0,7 V.
Der Signalweg in Aufnahmeposition ist im linkem Kanal gezeigt, und die Wiedergabeposition ist im rechten Kanal gezeigt.

CONDITIONS DE MESURE

Toutes les tensions en courant continu (CC) sont mesurées par rapport à la masse et à l'aide d'un voltmètre avec une résistance interne de 10 Mohms.
Les oscillogrammes et les tensions en courant alternatif (CA) sont mesurées par rapport à la masse à l'aide d'un oscilloscope ou d'un voltmètre avec une impédance d'entrée de 1 Mohm.
Les tensions sont mésurées à niveau de reproduction (333 Hz 250 pWb mm) et Dolby NR OFF.
Les tensions CA sont indiquées en millivolt (mV), par exemple 660 mV.
Les tensions CC sont indiquées en volt (V), par exemple 0,7 V.
Les trajectoire du signal en position enregistrement est indiquée dans le canal gauche, et en position reproduction dans le canal droit.

Explanation of the fuse symbols used in the set:

Explanation des symboles du fusible utilisés dans l'appareil:



Replace with same type 250 milliamperes 250 volts slow acting fuse.

Remplacer par un fusible de meme type retardé et de 250 milliamperes 250 volts.

ERLÄUTERUNGEN ZUM SCHALTBILD

Auf dem Schaltbild sind Typen-Nummern für Transistoren und IC's in den Fällen angegeben, in denen die Typen-Nummer für die Plazierung der Komponente in einem Schaltkreis eindeutig ist – z.B. TR20/BC 557B.

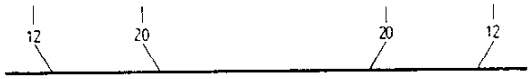
Wenn auf die Positionsnummer ein Stern folgt, **ist** die Ersatzteilnummer **zu benutzen**, da diese Komponente speziell ausgewählt werden ist – z.B. TR102*.

Koordinatensystem
Die grössten Printplatten sind mit einem Koordinatensystem versehen. Die Komponenten auf diesen Printplatten sind auf dem Schaltbild mit einer Koordinatennummer versehen, die erzählt, in welcher Koordinate der Printplatte sie angebracht sind (kleinere Schrifttyp als die der Positionsnummer – z.B. B3).

Steuerschaltkreise
Bei gewissen Steuerschaltkreisen ist der aktive Zustand durch eine Buchstabenbezeichnung (Cr = High mit CrO_2-Band) angegeben. Wenn die Bezeichnung mit einem Negationszeichen versehen ist, ist der aktive Zustand Low ($\overline{Cr}$ = Low mit CrO_2-Band).

Leitungsverbindungen
Die Leitungsverbindungen sind auf dem Schaltbild in »Bündeln« zusammengefaßt. Die einzelnen Leitungen sind mit Code-Bezeichnungen versehen, die angeben, wohin die Leitungen führen.

INTERNE VERBINDUNGEN AUF EINER SCHALTBILDSEITE



Interne Verbindungen auf einer Schaltbildseite werden mit einem Nummer angeben. Die Biegung der Leitung zeigt in welcher Richtung das andere Ende der Leitung sich befindet.

VERBINDUNGEN AN EINE ANDERE SCHALTBILDSEITE

DIAGRAM A

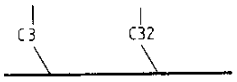
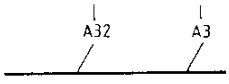


DIAGRAM C



Die Verbindungen an eine andere Schaltbildseite werden mit einem Nummer, sowie Indikation des Schaltbildes an den die Verbindung geht, angeben.

Symbol für Sicherheitskomponente

Bei der Auswechslung von Komponente mit diesem Symbol sind Komponente mit gleichen Teilnummer zu verwerden. Die neue Komponente ist in derselben Weise wie die ausgewechselte Komponente zu montieren.

NOTICE EXPLICATIVE DES SCHEMAS

Sur les schémas, les numéros de types sont indiquées pour les transistors et les circuits imprimés dans les cas où le numéro de type est univoque pour la disposition du composant dans un circuit – par example TR20/BC557B.

Si le numéro de position est suivi par un astérisque, il **faut** utiliser le numéro de la piece de rechange, étant donné qu'il dès lors d'un composant spécialement sélectionné – par example TR102*.

Systéme de coordonnées
Les plus grands circuits imprimés sont munis d'un systéme de coordonnées. Les composants de ces circuits imprimés portent un numéro de coordonnée sur le schéma qui indiquent dans quelle coordonnées ils sont placés sur le circuit imprimé (en caractères plus petit que ceux indiquent le numéro de position – par example B3).

Circuits de commande
Dans certains circuits de commande, l'état actif est indiqué par une représentation en lettres (Cr = Haut avec une bande CrO_2). Si cette représentation en lettres est munie d'un trait de négation, cela signifie que l'état actif est bas ($\overline{Cr}$ = Bas avec une bande CrO_2).

Connexions des fils
Les connexions de fils sur le schéma sont assemblées en »faisceaux«. Chaque fil est muni d'un code qui indique sa destination.

CONNEXION INTERNE SUR UN COTE DU SCHEMA

Connexions internes sur une page de schéma doits être indiquées par un numéro. L'angle du fil indique la direction dans laquelle l'autre bout du fil doit être trouvé.

CONNEXION VERS UN AUTRE COTE DU SCHEMA

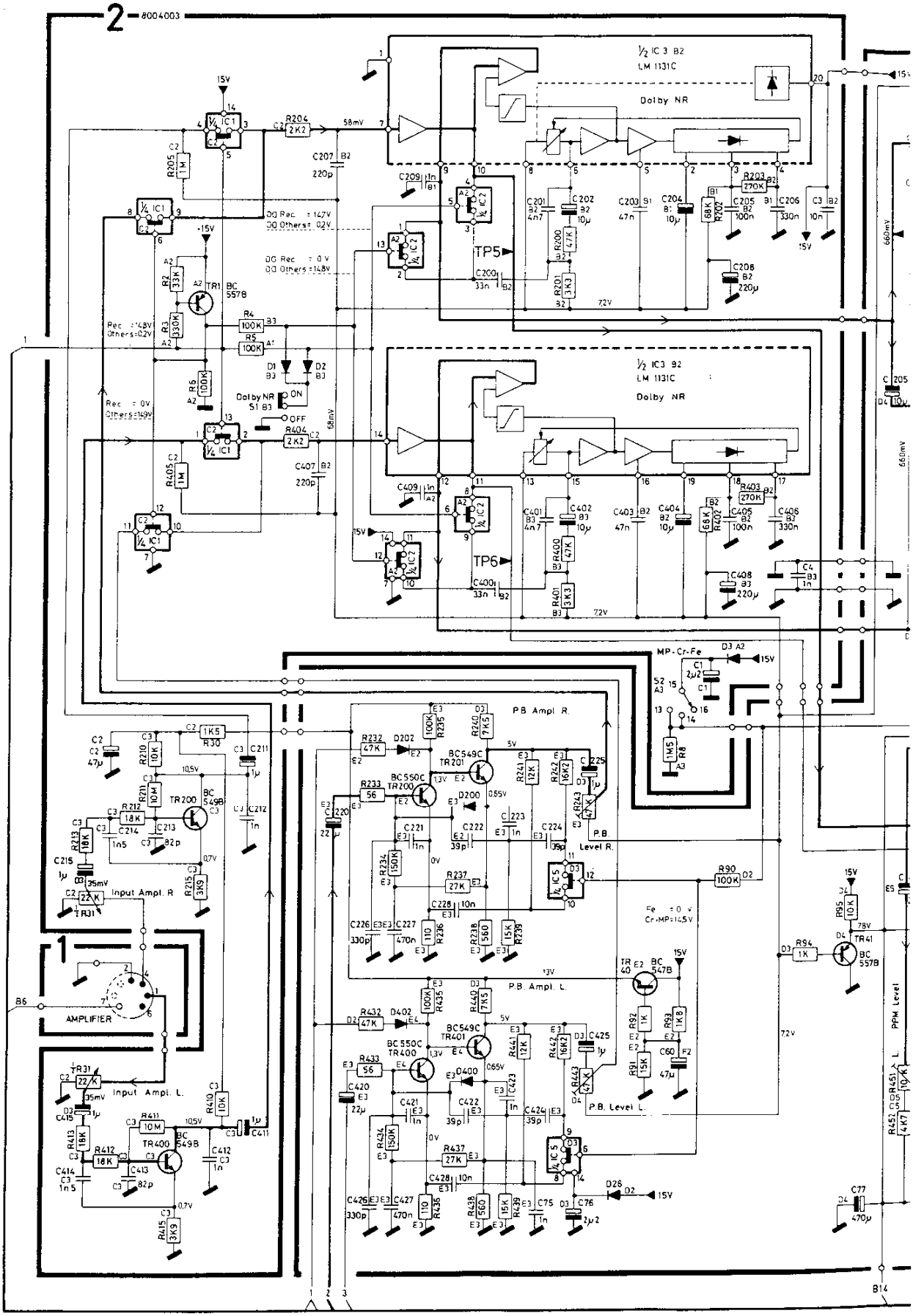
Connexions vers une autre page de schéma doits être indiquées par un numéro, et par lettre du schéma indiquant la distination de la connexion.

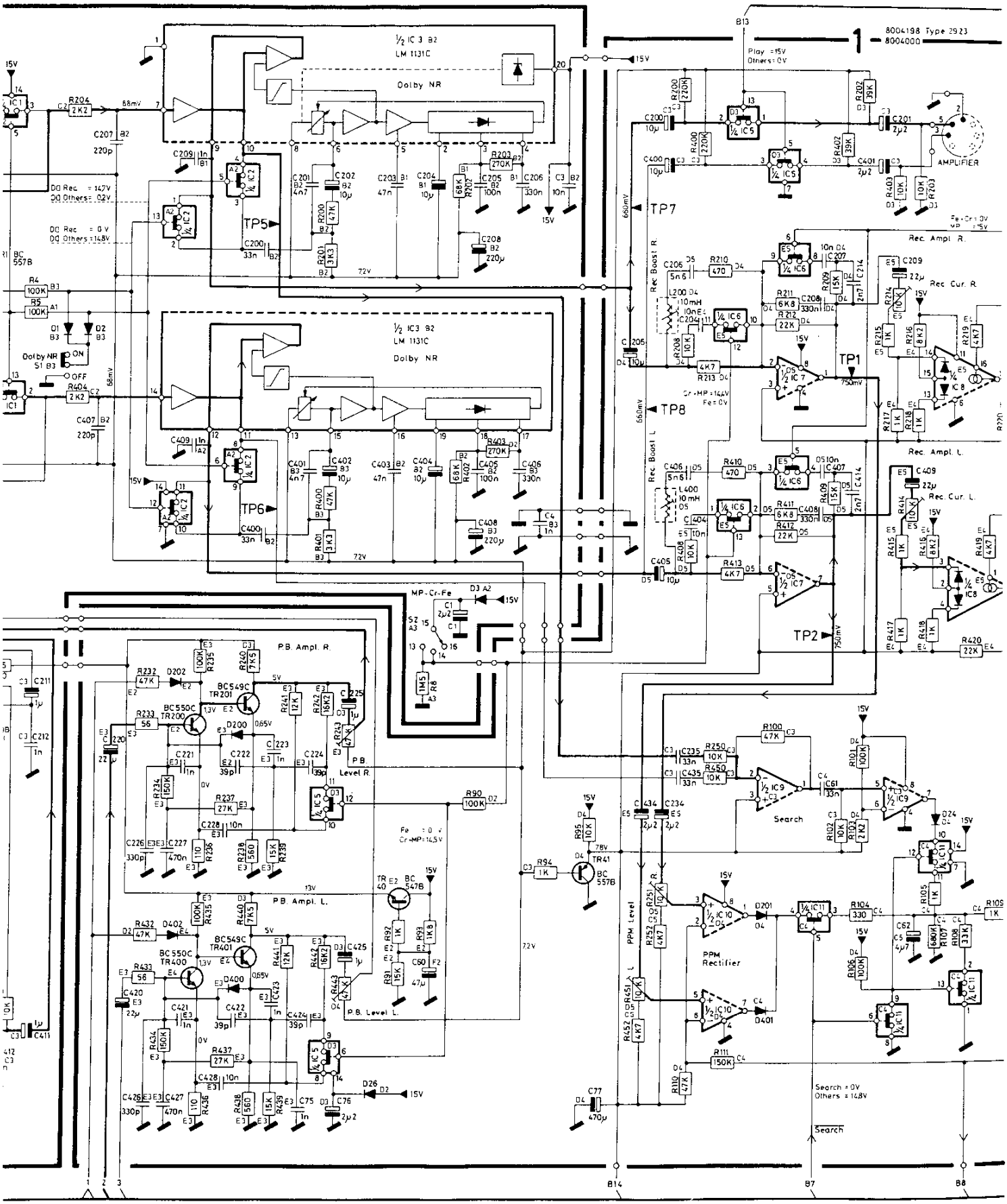
Symbol des composants de sécurité

En remplacant un composant portant ce symbole, il faut utiliser les composants de même no. de référence. Le nouveau composant doit être de monté de la même manière que celui qu'il remplace.

1-4

DIAGRAM A


2
8004003
½ IC 3 B2
LM 1131C
Dolby NR
TP5
TP6
Dolby NR S1 B3
ON
OFF
P.B. Ampl. R.
P.B. Ampl. L.
P.B. Level R.
P.B. Level L.
Input Ampl. R
Input Ampl. L.
AMPLIFIER
MP-Cr-Fe
PPM Level
1
B6
B14


8004198 Type 2923
8004000
½ IC 3 B2
LM 1131C
Dolby NR
Play = 15V
Others = 0V
AMPLIFIER
TP1
TP2
TP5
TP6
TP7
TP8
Rec. Ampl. R.
Rec. Ampl. L.
Rec. Cur. R.
Rec. Cur. L.
Rec Boost R.
Rec Boost L.
P.B. Ampl. R.
P.B. Ampl. L.
P.B. Level R.
P.B. Level L.
PPM Level
PPM Rectifier
Search
Search = 0V
Others = 14.8V
Dolby NR S1 B3
ON
OFF
MP-Cr-Fe
Fe = 0 V
Cr-MP = 14.5 V
Cr-MP = 14.4V
Fe = 0V
660mV
750mV
72V
68mV
15V
0V

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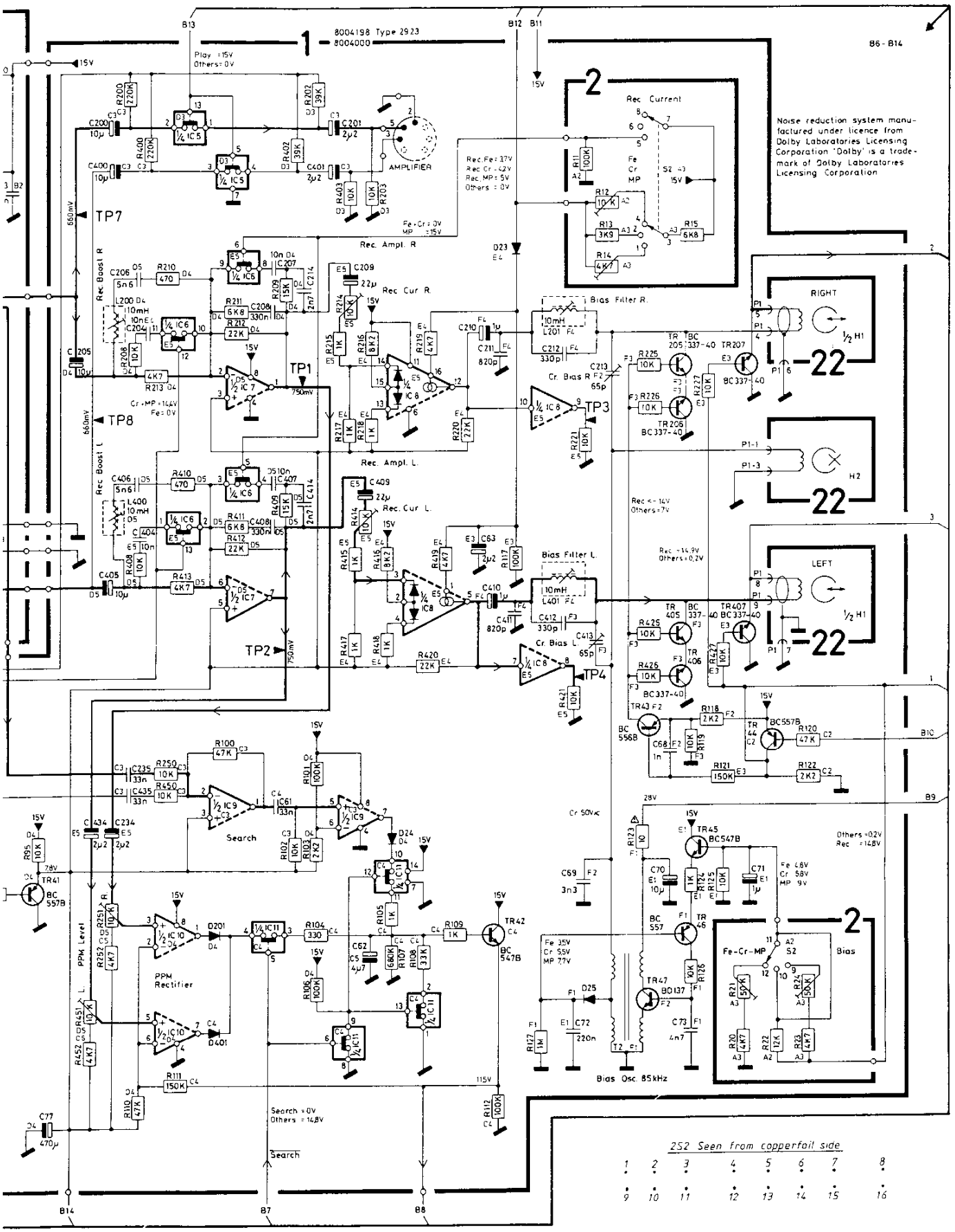

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DIAGRAMFORKLARING

På diagrammet er der angivet typenumre på transistorer og IC'er i de tilfælde hvor typenummeret er entydigt for komponentens placering i kredsløbet – f.eks. TR20/BC 557B.

Hvis positionsnummeret er efterfulgt af en stjerne **skal** reservedelsnummeret benyttes, da denne komponent er specielt udvalgt – f.eks. TR102*.

EXPLANATION OF DIAGRAM

Type numbers of transistors and IC's have been indicated on the diagram in those cases where the type number is unambiguous for the position of the component in a circuitry – e.g. TR20/BC 557B.

If the position number is followed by an asterisk the spare part number **must be used** because this component has been expecially selected – e.g. TR102*.

Koordinatsystem

De største printplader er forsynet med et koordinatsystem. Komponenterne på disse printplader er på diagrammet forsynet med en koordinatbetegnelse, som fortæller i hvilket felt på printpladen de er placeret (mindre skrifttype end positionsnummeret - f.eks. B3).

System of Co-ordinates

The largest PC-boards have been provided with a co-ordinate system. The components on these PC-boards are provided with a grid reference on the diagram indicating in what grid they are positioned on the PC-board (smaller typing than position numbers – e.g. B3).

Styrekredsløb

I visse styrekredsløb er den aktive tilstand angivet med en bogstavsbetegnelse (Cr = High med CrO_2 bånd). Hvis betegnelsen er forsynet med negationstegn er den aktive tilstand LOW (Cr = LOW med CrO_2 bånd).

Control Circuit

In certain control circuits the active mode has been indicated by means of a letter symbol (Cr = HIGH with CrO_2 tapes). If the symbol has a negation superscript bar the active mode is LOW (Cr = LOW with CrO_2 tapes).

Ledningsforbindelser

Ledningsforbindelserne på diagrammet er samlet i »bundter«. De enkelte ledninger er forsynet med koder, der fortæller hvortil de går.

Wiring Connections

The wiring connections on the diagram are assembled in »bundles«. The individual wires are coded to indicate to where they are leading.

INTERN FORBINDELSE PÅ EN DIAGRAMSIDE

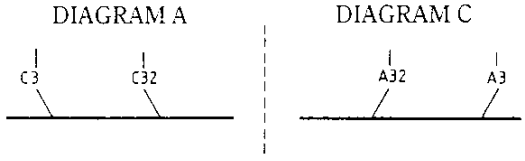
INTERNAL CONNECTION ON ONE DIAGRAM PAGE

Interne forbindelser på en diagramside angives med et tal. Knækket på ledningen viser i hvilken retning den anden ende af ledningen findes.

Internal connections on a diagram page are indicated by a number. The bend of the wire indicates in which direction the other end of the wire may be found.

FORBINDELSE TIL EN ANDEN DIAGRAMSIDE

CONNECTION TO ANOTHER DIAGRAM PAGE



Forbindelsen til en anden diagramside angives med et tal, samt bogstav indikation på det diagram forbindelsen går til.

Connections to another diagram page are indicated by a number, as well as by a letter of the diagram to which the connections lead.

Symbol for sikkerhedskomponenter

Symbol for Safety Components

Ved udskiftning af komponenter med dette symbol skal der anvendes komponenter med samme reservedelsnummer. Den nye komponent skal monteres på samme måde som den udskiftede.

When replacing components with this symbol components with identical part numbers are to be used. The new component must be fitted in the same way as the one replaced.

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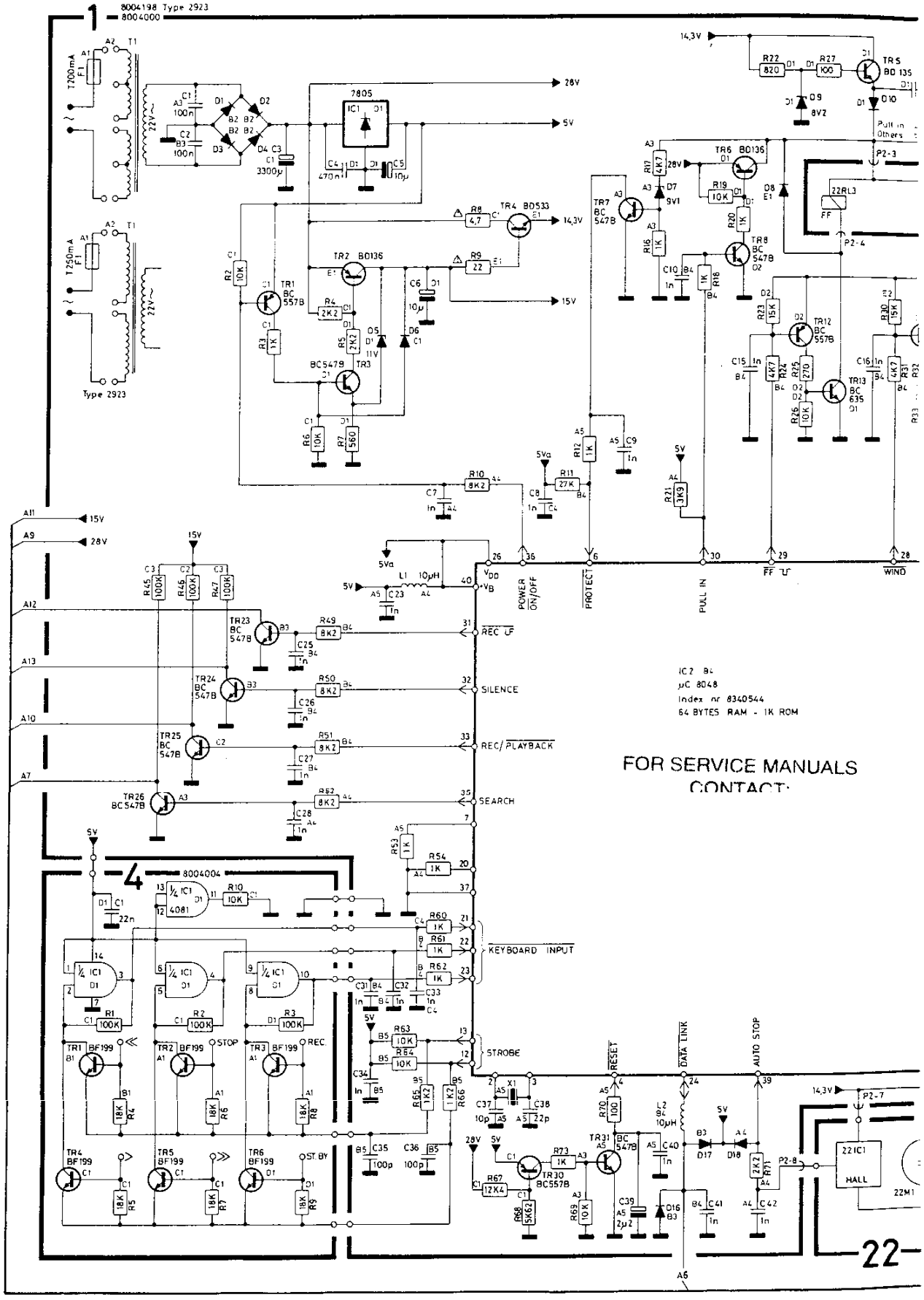
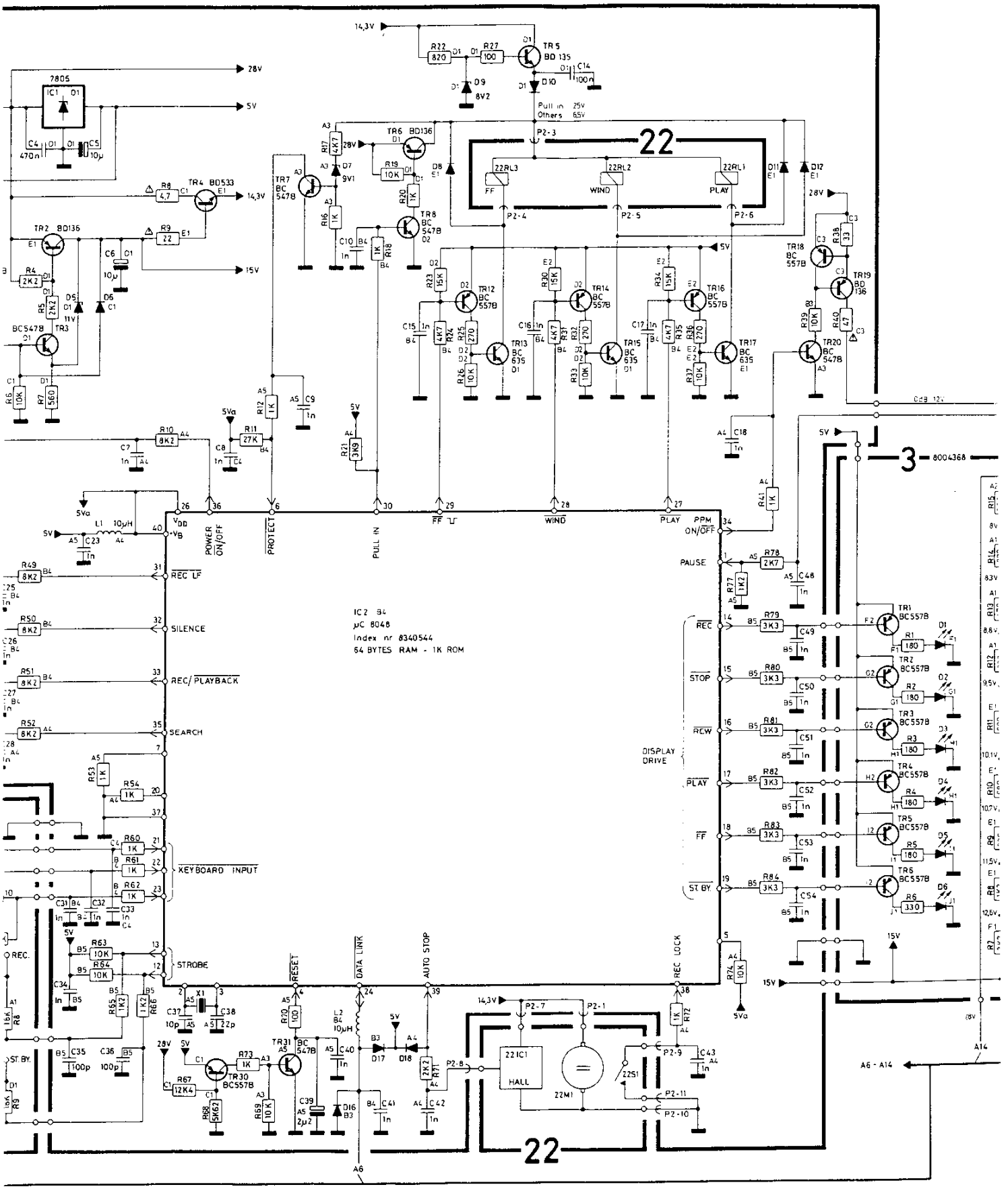
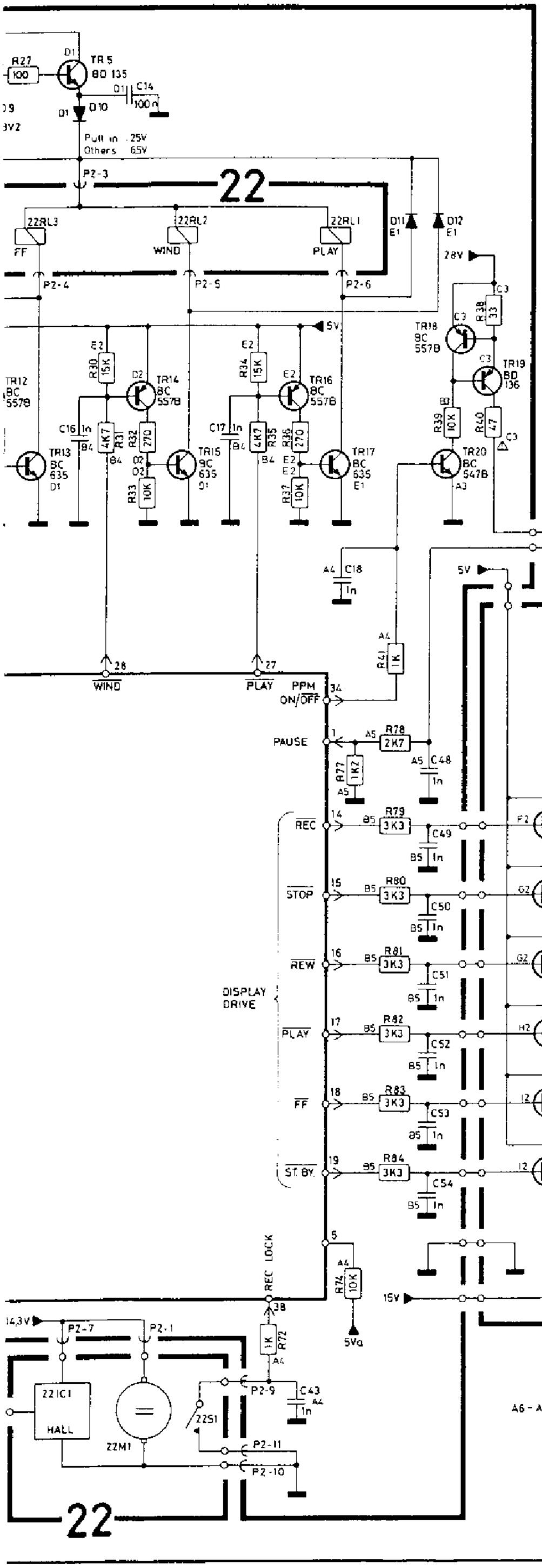
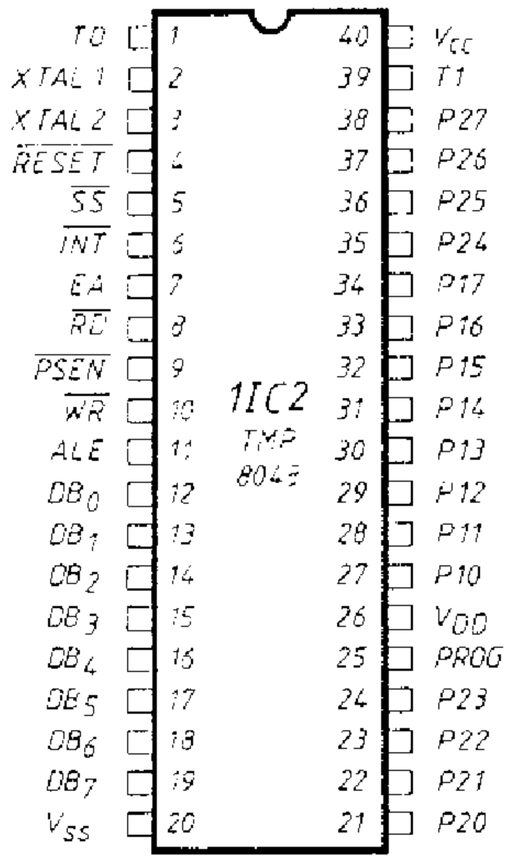
DIAGRAM B



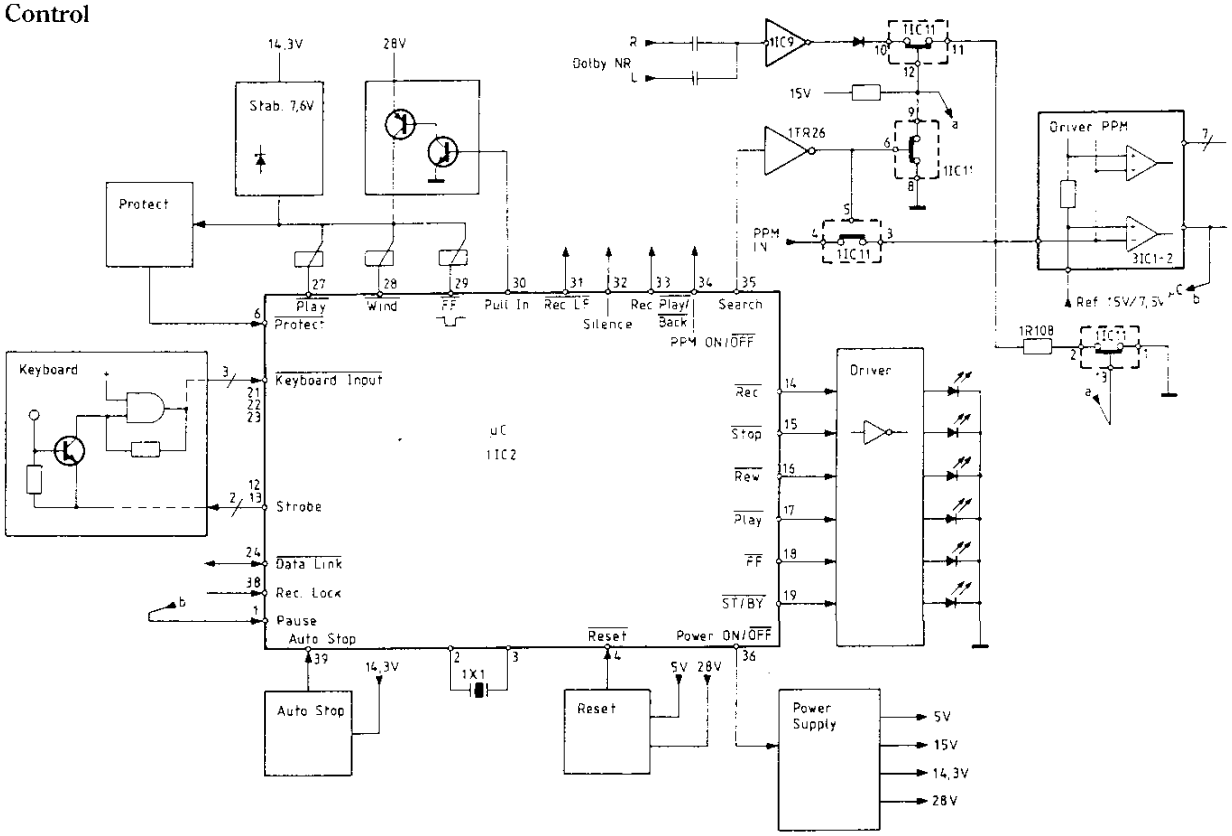

14,3V
28V
5V
15V
7805
IC1
TR1 BC557B
TR2 BD136
TR3 BC547B
TR4 BD533
TR5 BD135
TR6 BD136
TR7 BC547B
TR8 BC547B
TR12 BC557B
TR13 BC635
TR14 BC557B
TR15 BC635
TR16 BC557B
TR17 BC635
TR18 BC557B
TR19 BD136
TR20 BC547B
TR30 BC557B
22RL3
22RL2
22RL1
FF
WIND
PLAY
Pull in 25V
Others 6,5V
P2-3
P2-4
P2-5
P2-6
P2-7
P2-1
P2-8
P2-9
P2-10
P2-11
22
3
8004368
IC2 B4
µC 8048
Index nr 8340544
64 BYTES RAM - 1K ROM
POWER ON/OFF
PROTECT
PULL IN
FF
WIND
PLAY
PPM ON/OFF
PAUSE
REC LF
SILENCE
REC/PLAYBACK
SEARCH
KEYBOARD INPUT
STROBE
RESET
DATA LINK
AUTO STOP
REC LOCK
DISPLAY DRIVE
REC
STOP
REW
PLAY
FF
ST. BY.
HALL
22M1
22S1
A6 - A14


22
R27 100
D1
TR5 BD 135
C14 100n
D10
Pull in 25V
Others 65V
P2-3
22RL3
22RL2
22RL1
FF
WIND
PLAY
D11 E1
D12 E1
28V
P2-4
P2-5
P2-6
5V
TR12 BC 557B
TR13 BC 635
TR14 BC 557B
TR15 BC 635
TR16 BC 557B
TR17 BC 635
TR18 BC 557B
TR19 BD 136
TR20 BC 547B
R30 15K
R31 4K7
R32 270
R33 10K
R34 15K
R35 4K7
R36 270
R37 10K
R38 33
R39 10K
R40 47
C16 1n
C17 1n
C18 1n
0d9 12V
(Cur. ≤ 20mA)
3
8004368
28
27
WIND
PLAY
PPM ON/OFF
34
R41 1K
PAUSE
R78 2K7
C48 1n
R77 1K2
REC
STOP
REW
PLAY
FF
ST. BY.
R79 3K3
R80 3K3
R81 3K3
R82 3K3
R83 3K3
R84 3K3
C49 1n
C50 1n
C51 1n
C52 1n
C53 1n
C54 1n
TR1 BC557B
TR2 BC557B
TR3 BC557B
TR4 BC557B
TR5 BC557B
TR6 BC557B
R1 180
R2 180
R3 180
R4 180
R5 180
R6 330
D1
D2
D3
D4
D5
D6
DISPLAY DRIVE
REC LOCK
R74 10K
5Va
15V
14,3V
P2-7
P2-1
22IC1
HALL
22M1
22S1
R72 1K
P2-9
P2-11
P2-10
C43 1n
C1
C2
C3
A1
A2
A3
A4
A5
B1
B2
B4
B5
D1
D2
E1
E2
F1
F2
G1
G2
H1
H2
I1
I2
J1
J2
A6 - A14
A14
A8
7.8V
10.7V
PPM
15V
IC1 A1 LM324
IC2 E2 LM324
R15 330
R14 270
R13 470
R12 820
R11 680
R10 680
R9 820
R8 1K2
R7 2K7
8V
8.3V
8.8V
9.5V
10.1V
10.7V
11.5V
D15
D16
D17
D18
D19
R16 4K7
R17 10K
R18 4K7
R19 10K
R20 4K7
R21 10K
R22 4K7
R23 10K
R24 4K7
R25 10K
R26 4K7
R27 4K7
R28 4K7
TR7 BC547B
TR8 BC547B
TR9 BC547B
TR10 BC547B
TR11 BC547B
TR12 BC547B
TR13 BC547B
TR14 BC547B
D9 -20
D10 -15
D11 -10
D12 -5
D13 -2
D14 0dB
D7 2
D8 4

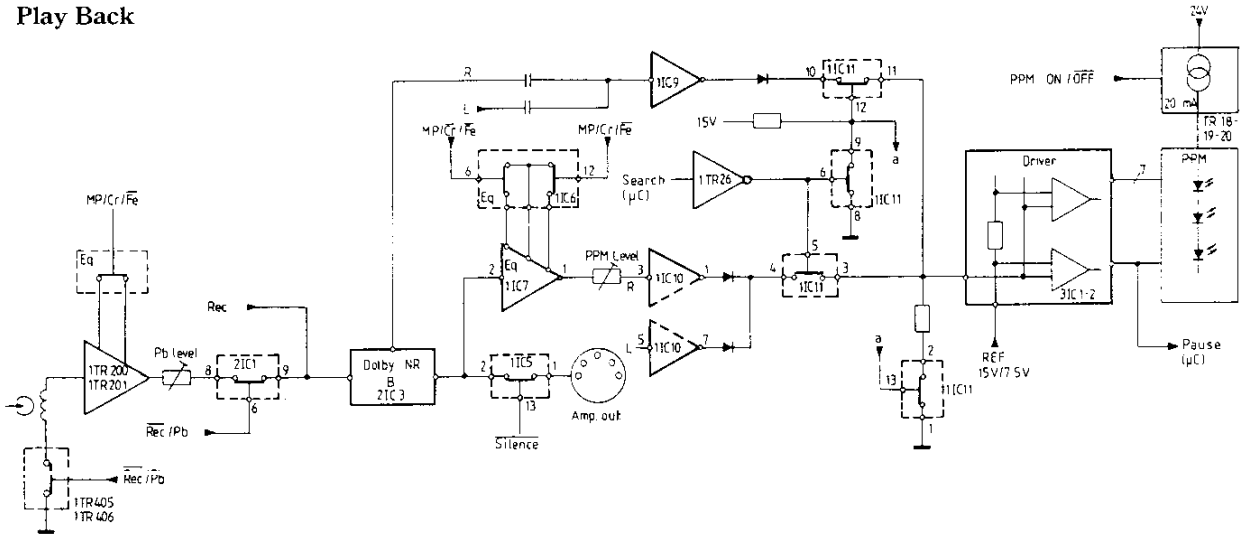

TO 1
XTAL 1 2
XTAL 2 3
RESET 4
SS 5
INT 6
EA 7
RD 8
PSEN 9
WR 10
ALE 11
DB0 12
DB1 13
DB2 14
DB3 15
DB4 16
DB5 17
DB6 18
DB7 19
VSS 20
1IC2 TMP 8043
40 VCC
39 T1
38 P27
37 P26
36 P25
35 P24
34 P17
33 P16
32 P15
31 P14
30 P13
29 P12
28 P11
27 P10
26 VDD
25 PROG
24 P23
23 P22
22 P21
21 P20

BLOCK DIAGRAMS

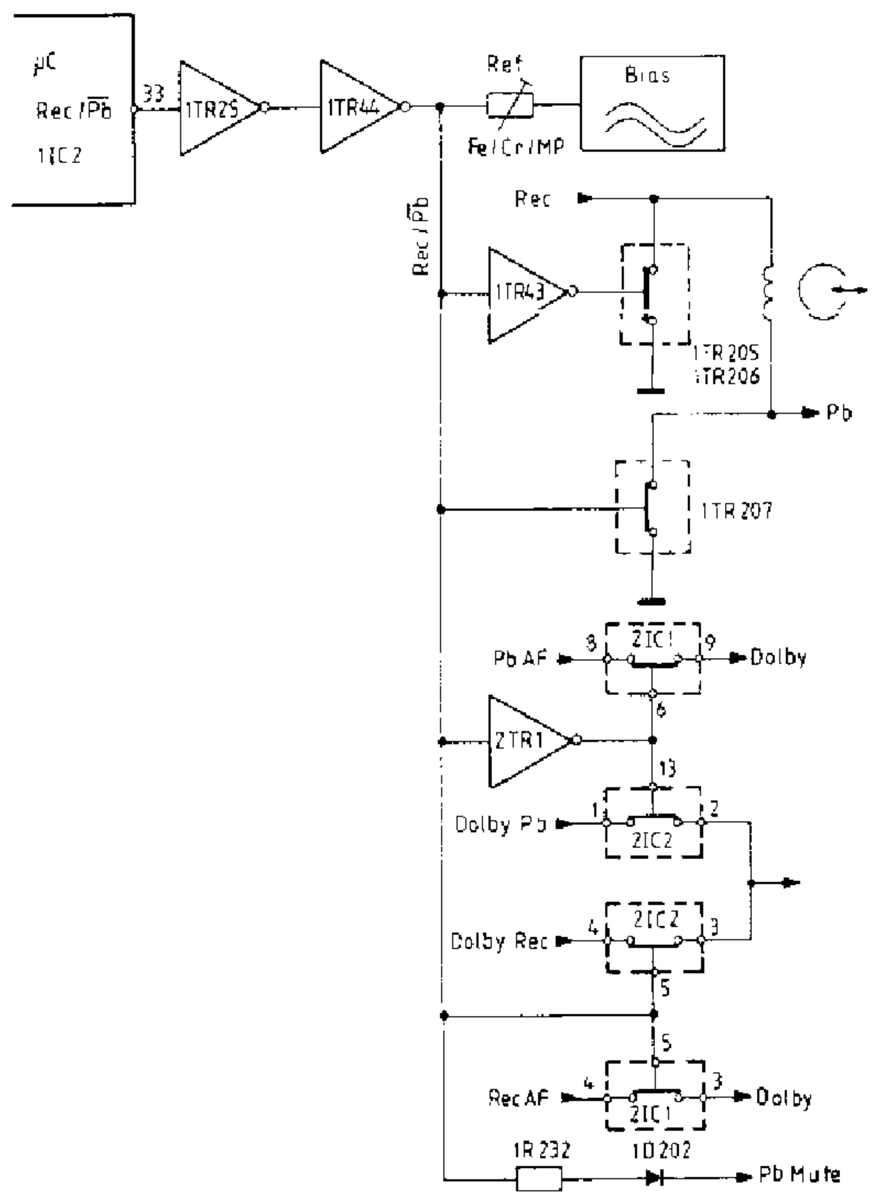
Control



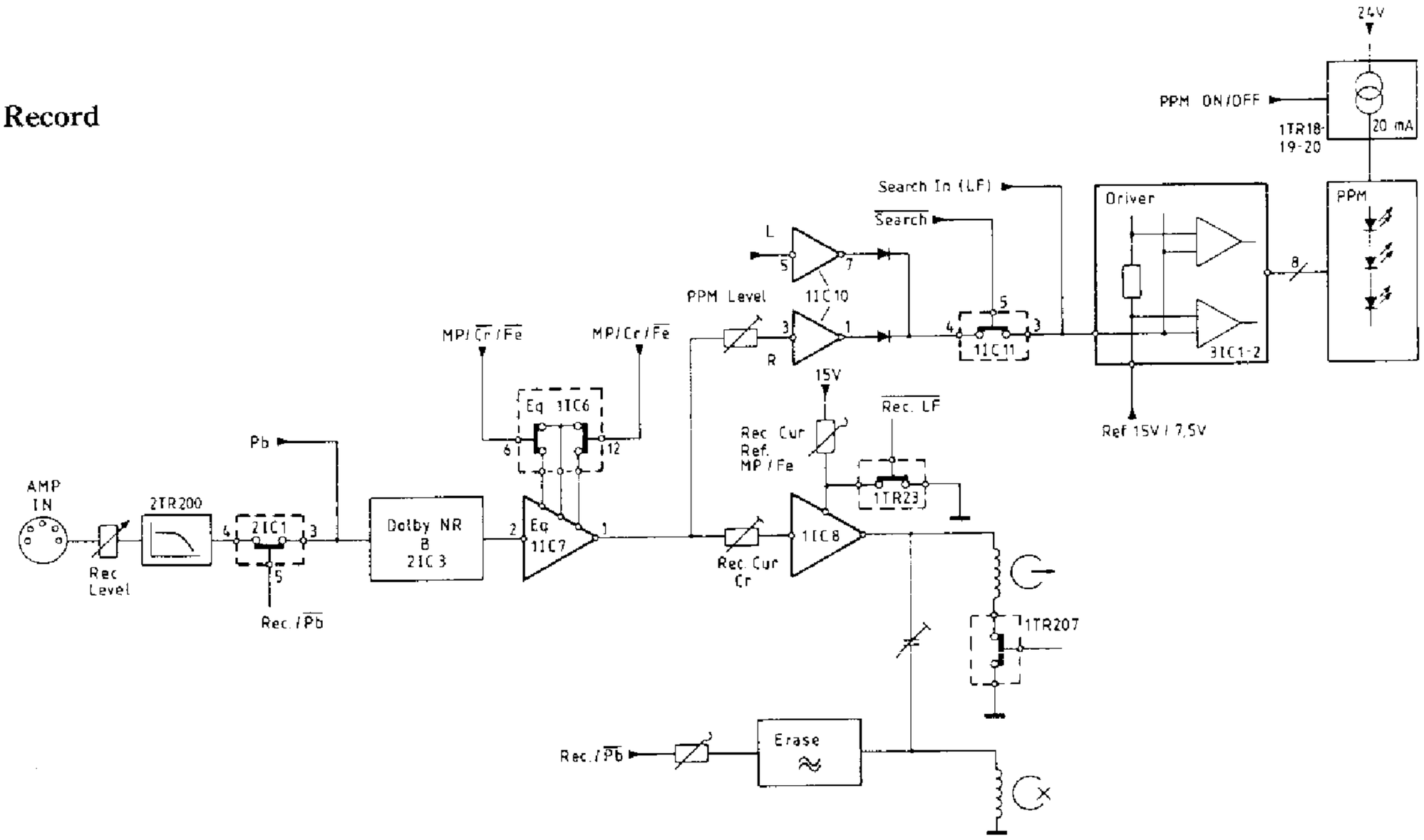
Play Back



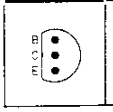
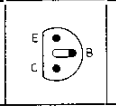
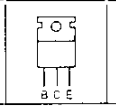
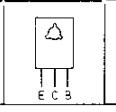
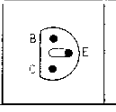
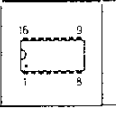
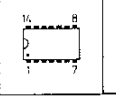
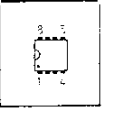
Rec./Pb. switch

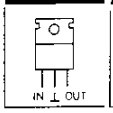
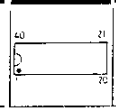


Record



SEMI-CONDUCTORS

17	20	31	32	42	101	102	103
							

105	124						
							

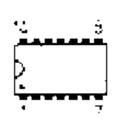
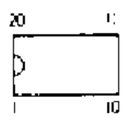
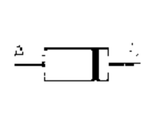
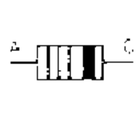
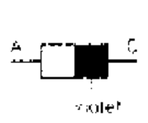
Transistors

1TR1	8320152	**20**	BC 557B
1TR2	8320240	**32**	BD 136/W
1TR3	8320097	**20**	BC 547B
1TR4	8320368	**31**	BD 533
1TR5	8320239	**32**	BD 135/W
1TR6	8320240	**32**	BD 136/W
1TR7-8	8320097	**20**	BC 547B
1TR12	8320152	**20**	BC 557B
1TR13	8320378	**17**	BC 635
1TR14	8320152	**20**	BC 557B
1TR15	8320378	**17**	BC 635
1TR16	8320152	**20**	BC 557B
1TR17	8320378	**17**	BC 635
1TR18	8320152	**20**	BC 557B
1TR19	8320240	**32**	BD 136/W
1TR20	8320097	**20**	BC 547B
1TR23-26			
1TR30	8320152	**20**	BC 557B
1TR31	8320097	**20**	BC 547B
1TR40			
1TR41	8320152	**20**	BC 557B
1TR42	8320097	**20**	BC 547B
1TR43	8320242	**20**	BC 556B
1TR44	8320152	**20**	BC 557B
1TR45	8320097	**20**	BC 547B
1TR46	8320152	**20**	BC 557B
1TR47	8320292	**32**	BD 137/W
1TR400	8320458	**20**	BC 550C
1TR401	8320221	**20**	BC 549C
1TR405-407	8320487	**20**	BC 337-40
2TR1	8320152	**20**	BC 557B
2TR400	8320095	**20**	BC 549B
3TR1-6	8320152	**20**	BC 557B
3TR7-14	8320097	**20**	BC 547B
4TR1-6	8320281	**42**	BF 199

IC's

1IC1	8340065	**105**	LM 7805 CT
			UA 7805 UC
			MC 7805 CT
			UA 7805 CKC
1IC2	△8340544	**124**	TMP 8048 P
1IC5-6	△8340202	**102**	MC 14066 BCP
		102	CD 4066 BCN
		102	HEF 4066 BP
1IC7	8340142	**103**	LM 1458 N
1IC8	8340545	**101**	LM 13700 N
1IC9	△8340195	**103**	LF 353 N
		103	TL 072 CP
		103	UAF 772 TC
1IC10	8340142	**103**	LM 1458 N

Diodes

102	134	209	215	217			
							

1IC11	△8340202	**102**	MC 14066 BCP
		102	CD 4066 BCN
		102	HEF 4066 BP
2IC1-2	△8340202	**102**	MC 14066 BCP
		102	CD 4066 BCN
		102	HEF 4066 BP
2IC3	8340546	**134**	LM 1131 CN
1D1-4	8300023	**209**	1N 4002
1D5	8300326	**209**	ZPD 11V
		209	BZX 83C11V
		209	BZX 79C11V
1D6	8300058	**209**	1N 4148
		215	1N 4148
		217	SFD 184
1D7	8300028	**209**	ZPD 9V1
		209	BZX 79C9V1
		209	BZX 83C9V1
1D8	8300058	**209**	1N 4148
		215	1N 4148
		217	SFD 184
1D9	8300173	**209**	ZPD 8.2V
		209	BZX 79C8V2
		209	BZX 83C8V2
1D10	8300023	**209**	1N 4002

3IC1-2	8340157	**102**	LM 324 N
		102	TDB 0124 DP
4IC1	△8340172	**102**	HEF 4081 BP
		102	CD 4081 BCN
		102	MC 14081 BCP
1D11-12	8300058	**209**	1N 4148
1D16-18		**215**	1N 4148
1D23-26		**217**	SFD 184
1D400-402			
2D1-3	8300058	**209**	1N 4148
		215	1N 4148
		217	SFD 184
3D1-5	8330084		LT 9306 D A
3D6	8330001		CQV 10-5
			CQY 85-NB
			L/M
3D7-8	8330084		LT 9306 D A
3D9-14	8330126		LT 9306 E G/A
3D15-19	8300058	**209**	1N 4148
		215	1N 4148
		217	SFD 184

△betyder at statisk elektricitet kan ødelægge komponenten.
△indicates that static electricity may destroy the component.
△bedeutet, daß statische Elektrizität die Komponente zerstören kann.
△signifi que électricité statique peut detruire le composant.

LIST OF ELECTRICAL PARTS

Signal and Control,
8004000, PCB1
8004198, PCB1
type 2923

Resistors not mentioned are 5% 1/4W carbon film.

R8	5020482	4.7 Ω 10% 1/2W	R414	5370074	10 kΩ 20% 0.1W
R9	5020148	22 Ω 10% 1/4W	R436	5020360	110 Ω 1% 1/4W
R20	5011028	1 kΩ 5% 1/2W	R440	5020226	7.5 kΩ 1% 1/4W
R40	5020345	47 Ω 10% 1/4W	R442	5020612	16.2 kΩ 1% 1/4W
R67	5020654	12.4 kΩ 1% 1/4W	R443	5370061	47 kΩ 20% 0.1W
R68	5020221	5.62 kΩ 1% 1/4W	R451	5370074	10 kΩ 20% 0.1W
R123	5020489	10 Ω 10% 1/4W			

C1	4130103	100 nF 20% 250V	C54	4010027	1 nF 10% 63V
C2	4130103	100 nF 20% 250V	C60	4200483	47 µF 20% 16V
C3	4200559	3300 µF 40V	C61	4130176	33 nF 20% 63V
C4	4130293	470 nF 10% 63V	C62	4200477	4.7 µF 20% 25V
C5	4200431	10 µF 20% 16V	C63	4200423	2.2 µF 20% 50V
C6	4200484	10 µF 20% 25V	C68	4010027	1 nF 10% 63V
C7	4010027	1 nF 10% 63V	C69	4100187	3.3 nF 5% 630V
C8	4010027	1 nF 10% 63V	C70	4200487	10 µF 20% 50V
C9	4010027	1 nF 10% 63V	C71	4200426	1 µF 20% 50V
C10	4010027	1 nF 10% 63V	C72	4130215	220 nF 20% 63V
C14	4130179	100 nF 20% 63V	C73	4010063	4.7 nF 10% 63V
C15	4010027	1 nF 10% 63V	C75	4010027	1 nF 10% 63V
C16	4010027	1 nF 10% 63V	C76	4200423	2.2 µF 20% 50V
C17	4010027	1 nF 10% 63V	C77	4200395	470 µF -10+100% 16V
C18	4010027	1 nF 10% 63V	C400	4200431	10 µF 20% 16V
C23	4010027	1 nF 10% 63V	C401	4200423	2.2 µF 20% 50V
C25	4010027	1 nF 10% 63V	C404	4130220	10 nF 5% 63V
C26	4010027	1 nF 10% 63V	C405	4200431	10 µF 20% 16V
C27	4010027	1 nF 10% 63V	C406	4100121	5.6 nF 5% 63V
C28	4010027	1 nF 10% 63V	C407	4130220	10 nF 5% 63V
C31	4010027	1 nF 10% 63V	C408	4130227	330 nF 10% 63V
C32	4010027	1 nF 10% 63V	C409	4200480	22 µF 20% 10V
C33	4010027	1 nF 10% 63V	C410	4200426	1 µF 20% 50V
C34	4010027	1 nF 10% 63V	C411	4010033	820 pF 10% 63V
C35	4000069	100 pF 5% 63V	C412	4010062	330 pF 10% 63V
C36	4000069	100 pF 5% 63V	C413	4340003	5.5 - 65 pF
C37	4000175	10 pF 5% 63V	C414	4010061	2.7 nF 10% 63V
C38	4000185	22 pF 5% 63V	C420	4200480	22 µF 20% 10V
C39	4200423	2.2 µF 20% 50V	C421	4010027	1 nF 10% 63V
C40	4010027	1 nF 10% 63V	C422	4003135	39 pF 5% 63V
C41	4010027	1 nF 10% 63V	C423	4010027	1 nF 10% 63V
C42	4010027	1 nF 10% 63V	C424	4003135	39 pF 5% 63V
C43	4010027	1 nF 10% 63V	C425	4200426	1 µF 20% 50V
C48	4010027	1 nF 10% 63V	C426	4010062	330 pF 10% 100V
C49	4010027	1 nF 10% 63V	C427	4130293	470 nF 10% 63V
C50	4010027	1 nF 10% 63V	C428	4130220	10 nF 5% 63V
C51	4010027	1 nF 10% 63V	C434	4200423	2.2 µF 20% 50V
C52	4010027	1 nF 10% 63V	C435	4130176	33 nF 20% 63V
C53	4010027	1 nF 10% 63V			

F1	6600037	200 mA-S, type 2921, 2922, 2925			
	6600032	250 mA-S, type 2923			

L1	8020342	10 µH	L400	8022111	Rec. Boost 10 mH
L2	8020342	10 µH	L401	8022101	Bias filter 10 mH

P1	7220124	Plug 9 pins	P2	7220139	Plug 11 pins

T1	8013312	Trafo 220V/240V type 2921, 2922, 2925	T2	8020469	Bias osc.
	8013313	Trafo 120V type 2923			

X1	8090003	4 MHz

Dolby and Secondary Operation, 8004003, PCB2

R12	5370074	10 kΩ 20% 0.1W	R31	5310112	2 x 22 kΩ
R14	5370058	4.7 kΩ 20% 0.1W	R401	5010265	3.3 kΩ 2% 1/2W
R21	5370061	50 kΩ 20% 0.1W	R411	5011083	10 MΩ 5% 1/2W
R24	5370061	50 kΩ 20% 0.1W			

C1	4201035	2.2 µF -10+50% 63V	C406	4130171	330 nF 20% 63V
C2	4200128	47 µF -10+100% 16V	C407	4010021	220 pF 10% 63V
C3	4010072	10 nF -20+100% 40V	C408	4200122	220 µF -10+100% 10V
C4	4010027	1 nF 10% 63V	C409	4010027	1 nF 10% 63V
C400	4130222	33 nF 2.5% 63V	C411	4200426	1 µF 20% 50V
C401	4100031	4.7 nF 1% 63V	C412	4010027	1 nF 10% 63V
C402	4200342	10 µF -10+50% 63V	C413	4000110	82 pF 5% 63V
C403	4130219	47 nF 5% 250V	C414	4010067	1.5 nF 10% 63V
C404	4200342	10 µF -10+50% 63V	C415	4200380	1 µF -10+50% 63V
C405	4130179	100 nF 20% 63V			

S1	7400200	Omskifter	S2	7400232	Omskifter

Touch, 8004004, PCB4

C1	4010107	22 nF -20+100% 40V

MEKANISK STYKLISTE/ MECHANICAL PARTS LIST

1001	3454272	Dækplade	Cover
1002	3011000	Dæmpesystem	Damping system
1003	3458302	Sekundær panel samlet	Secondary panel complete
1004	2810098	Fjeder	Spring
1005	2830071	Stift	Pin
1006	2819196	Fjeder	Spring
1007	2810142	Fjeder	Spring
1008	2852045	Arm	Arm
1009	2775878	Knap	Button
1010	2775878	Knap	Button
1011	2530450	Vinkel	Bracket
1012	3414145	Kabinet, hvid	Cabinet, white
	3414147	Kabinet, metal grå	Cabinet, grey metallic
	3401335	Finer sæt, hvid	Veneer set, white
	3401337	Finer sæt, metal grå	Veneer set, grey metallic
	2853099	Udløser arm	Release lever
1013	2816209	Fjeder f. statisk el	Spring for static el
1014	3454348	Bund m. glidesko	Bottom with plastic foot
1015	3103083	Glidesko	Plastic foot
1016	3168276	Betjenings panel	Operating panel
1017	3955034	Snor (rulle)	String (roll)

01Modul	8004198	PCB signal og styring, USA	PCB Signal and control, USA
01Modul	8004000	PCB signal og styring	PCB Signal and control
0101	2568795	Køleplade	Heat sink
0102	2622248	Glimmerskive, stor	Mica sheet, large
0103	2622251	Glimmerskive, lille	Mica sheet, small
0104	2816195	Bøjle, stor	Clamp, large
0105	2816000	Bøjle, lille	Clamp, small
0106	3152279	Ledningsholder	Wire holder
	3302380	Skærm f. IC2, øverste	Screen f. IC2 upper
	3302381	Skærm f. IC2 nederste	Screen f. IC2, lower
	3170221	Isolationsstykke f. IC2	Insulating piece f. IC2
	3302360	Skærm f. 22P1	Screen f. 22P1
	7500002	Sikringsholder	Holder for fuse
	3358137	Køleplade f. TR47	Heat sink for TR47

02Modul	8004003	PCB Dolby/ Sekundær betjening	PCB Dolby/Secondary operation
	7200078	Fatning 20 pol	Socket 20 pins

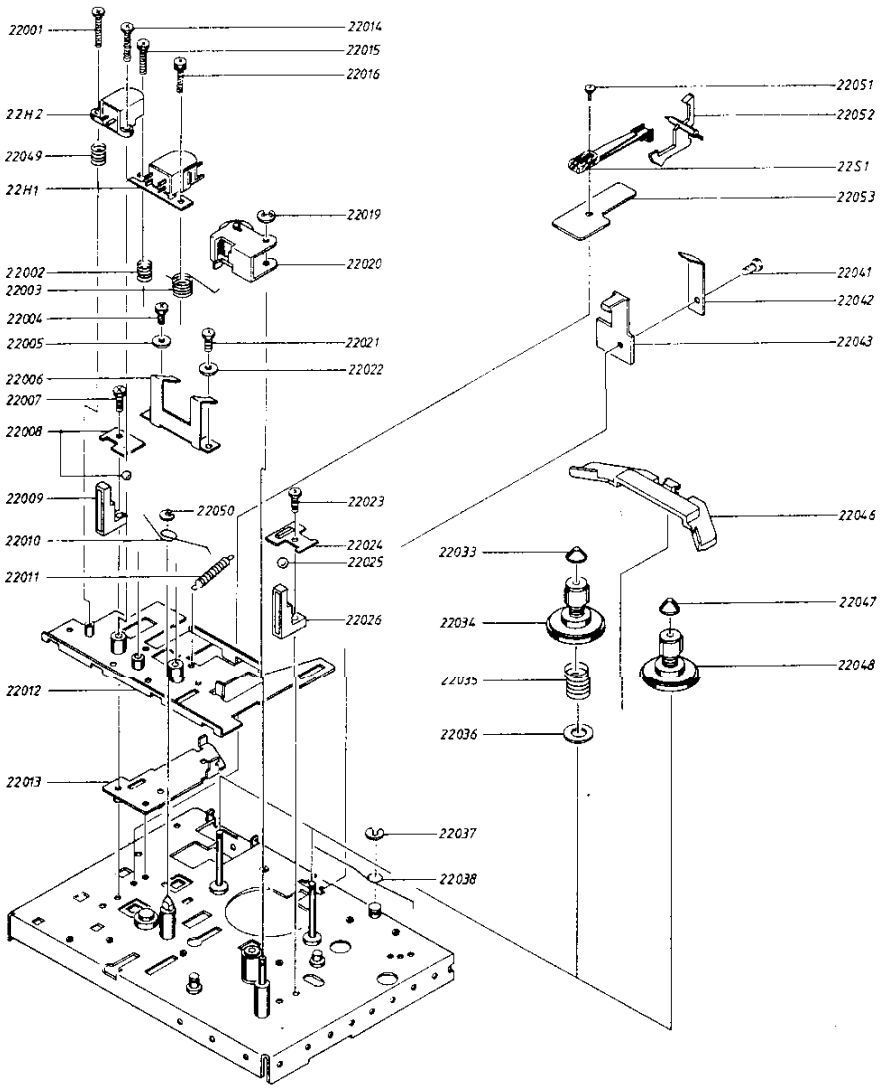
03Modul	8004368	PCB Betjening	PCB operating
0301	3152385	Holder f. dioder	Holder f. diodes

04Modul	8004004	PCB Touch	PCB Touch
	7500177	Kontakt stift	Contact pin

22P1	6275136	Ledning m. fatning	Wire with socket
22P2	6275125	Ledning m. fatning	Wire with socket

4-2

Løbeværk/
Tape Deck



22001	2034068	Skrue 2 x 5	Screw 2 x 5
22002	2812800	Fjeder	Spring
22003	2818000	Fjeder	Spring
22004	2036019	Skrue 2,6 x 4	Screw 2.6 x 4
22005	2622357	Skive	Washer
22006	2816281	Bladfjeder	Leaf spring
22007	2039050	Skrue 2,6 x 6	Screw 2.6 x 6
22008	2816280	Profil m. kugle	Profile w. ball
22009	3010000	Arm	Arm
22010	2819181	Fjeder	Spring
22011	2810146	Fjeder	Spring
22012	3112293	Chassis	Chassis
22013	3112186	Vinkel	Bracket
22014	2034063	Skrue 2 x 5	Screw 2 x 5
22015	2034068	Skrue 2 x 5	Screw 2 x 5
22016	*2036042*	*Skrue 2 x 5, sort*	*Screw 2 x 5, black*
22019	2390073	E-ring	E-ring
22020	2794099	Trykrulle komplet	Thrust roller
22021	2036019	Skrue 2,6 x 4	Screw 2.6 x 4
22022	2622357	Skive	Washer
22023	2039050	Skrue 2,6 x 6	Screw 2.6 x 6
22024	2816207	Bladfjeder	Leaf spring
22025	2917020	Kugle	Ball
22026	3010000	Arm	Arm
22033	3164547	Dæksel	Cover
22034	2726002	Spoletallerken	Supply reel
22035	2812096	Fjeder	Spring
22036	2622343	Skive	Washer

Bang&Olufsen

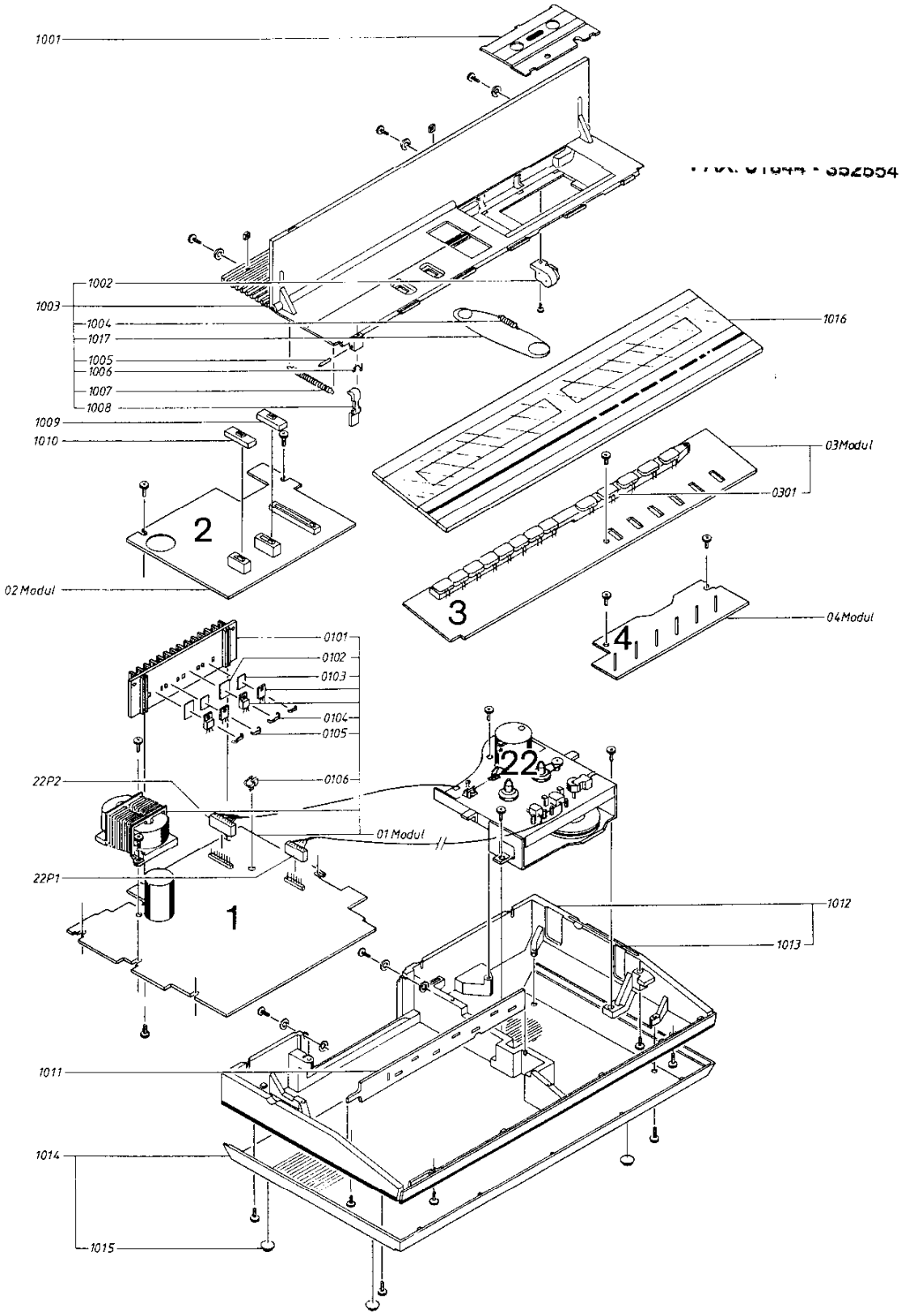
22037	2390090	E-ring	E-ring
22038	2819183	Fjeder	Spring
22041	2039039	Skrue 3 x 4	Screw 3 x 4
22042	2816208	Vinkel	Bracket
22043	2542636	Vinkel	Bracket
22046	2851134	Arm	Arm
22047	3164547	Dæksel	Cover
22048	2726002	Spoletallerken	Take-up reel
22049	2812000	Fjeder	Spring
22050	2390064	E-ring	E-ring
22051	2034071	Skrue 2 x 6	Screw 2 x 6
22052	2851146	Arm	Arm
22053	3170228	Isolationsstykke	Insulating piece

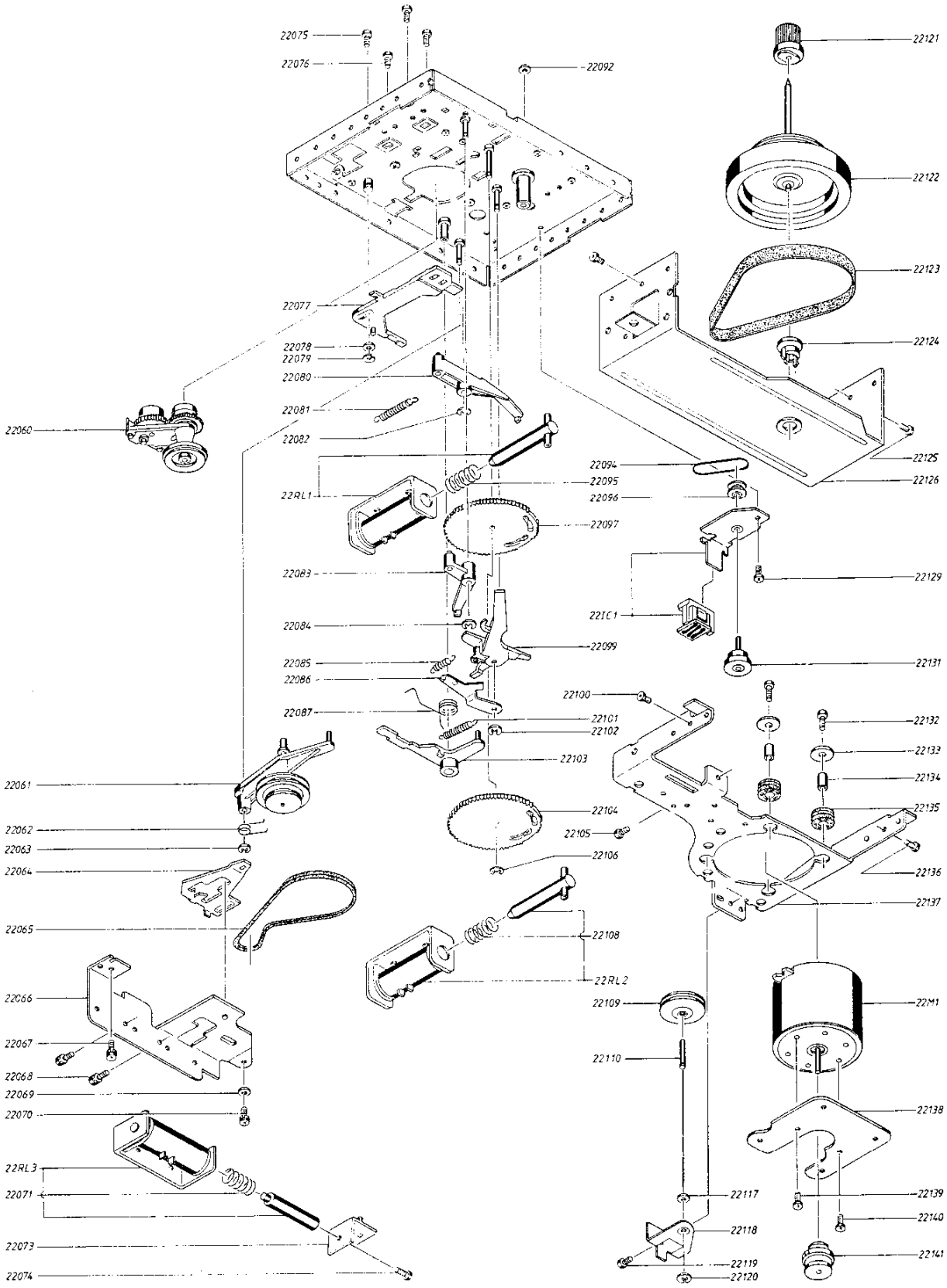
22H1	8600068	Tonehoved	Tape head
22H2	8600055	Slettehoved	Erase head

22S1	7410000	Omskifter	Switch

22060	2794098	Kobling	Clutch
22061	2750000	Kobling	Clutch
22062	2819182	Fjeder	Spring
22063	2390090	E-ring	E-ring
22064	3014005	Arm	Arm
22065	2732000	Rem	Belt
22066	2542620	Vinkel	Bracket
22067	2036022	Skrue 2,6 x 5, sort	Screw 2.6 x 5, black
22068	2038063	Skrue 3 x 5, sort	Screw 3 x 5, black
22069	2622132	Skive	Washer
22070	2036022	Skrue 2,6 x 5, sort	Screw 2.6 x 5, black
22071	2812152	Fjeder	Spring
22073	2530466	Vinkel	Bracket
22074	2038063	Skrue 3 x 5, sort	Screw 3 x 5, black
22075	2039043	Skrue 3 x 4	Screw 3 x 4
22076	2039043	Skrue 3 x 4	Screw 3 x 4
22077	2851135	Arm	Arm
22078	2622293	Skive	Washer
22079	2390053	E-ring	E-ring
22080	2851136	Arm	Arm
22081	2810147	Fjeder	Spring
22082	2390073	E-ring	E-ring
22083	2851137	Arm	Arm
22084	2390073	E-ring	E-ring
22085	2810150	Fjeder	Spring
22086	2851131	Arm	Arm
22087	2819184	Fjeder	Spring
22092	2622296	Skive	Washer
22094	2732039	Rem	Belt
22095	2812097	Fjeder	Spring
22096	2724070	Hjul	Wheel
22097	2700037	Drivhjul	Drive wheel
22099	2851138	Arm	Arm
22100	2039049	Skrue 3 x 5	Screw 3 x 5
22101	2810151	Fjeder	Spring
22102	2390073	E-ring	E-ring
22103	2851133	Arm	Arm
22104	2700038	Drivhjul	Drive wheel
22105	2039049	Skrue 3 x 5	Screw 3 x 5
22106	2390073	E-ring	E-ring
22108	2812097	Fjeder	Spring
22109	2804000	Hjul	Wheel
22110	2831047	Stift	Pin
22117	2622299	Skive	Washer
22118	2530467	Vinkel	Bracket
22119	2036022	Skrue 2,6 x 5, sort	Screw 2.6 x 5, black
22120	2390056	E-ring	E-ring
22121	2700036	Tandhjul	Toothed wheel
22122	2794096	Svinghjul	Flywheel
22123	2732064	Rem	Belt
22124	2905078	Lås	Lock
22125	2039049	Skrue 3 x 5	Screw 3 x 5
22126	3112295	Vinkel	Bracket
22129	2039049	Skrue	Screw
22131	3356044	Hjul samlet	Wheel assy

Bang&Olufsen




22075
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22C1
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22137
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22108
22RL2
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22067
22068
22069
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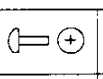
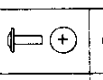
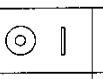
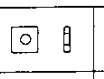
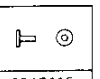
22109
22M1
22110
22138
22RL3
22071
22073
22074
22117
22118
22119
22120
22139
22140
22141

Bang&Olufsen

22132	2036044	Skrue 2,6 x 10, sort	Screw 2.6 x 10, black
22133	2622282	Skive	Washer
22134	2932046	Bøsning	Bushing
22135	2932000	Gummibøsning	Rubber bushing
22136	2039049	Skrue 3 x 5	Screw 3 x 5
22137	3112294	Vinkel	Bracket
22138	3122054	Vinkel	Bracket
22139	2036021	Skrue 2,6 x 3	Screw 2.6 x 3
22140	2036021	Skrue 2,6 x 3	Screw 2.6 x 3
22141	2722028	Remskive	Pulley
22RL1	6840023	Sugespole, play	Solenoid, play
22RL2	6840023	Sugespole, wind	Solenoid, wind
22RL3	6840027	Sugespole, FF	Solenoid, FF
22IC1	8004007	IC m/holder	IC w/holder
22M1	8400000	Motor	Motor

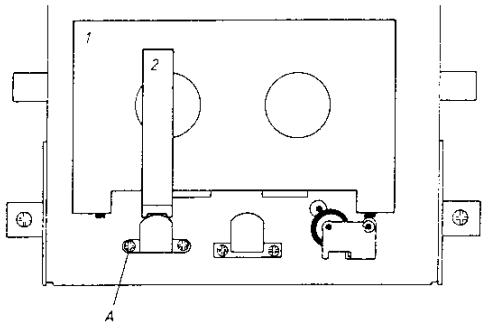
Ikke viste dele/
Parts not shown

3391748	Yderæske	Outer carton
3397524	Skumemballage sæt	Foam packing set
3917061	Skumfolie 700 x 400 mm	Foam wrapping 700 x 400 mm
3917074	Skumfolie 420 x 60 mm	Foam wrapping 420 x 60 mm
6270272	Signalkabel EURO	Signal cable EURO
6270280	Signalkabel US	Signal cable US
6271115	Netledning EURO	Mains lead EURO
6100012	Netledning US	Mains lead US
6271091	Netledning AUS	Mains lead AUS
3390225	Pose m. skruer osv. for vægophæng	Bag w. screws etc. for wall mounting
3390226	Pose m. fødder	Bag w. feet

Outlines / Metric Dimensions					
ø2.4x2.8xø4					2365005
M3				2380132	
3x9 self tapping	2013104				
3x9.5 self tapping		2013080			
M3x12	2039034				
3x16 self tapping	2013106				
3.2			2622321		
3.2 fibre			2622360		
3.5x6.5 self tapping		2015090			
3.5x9.5 self tapping		2015091			
3.5x13 self tapping		2015092			

MEKANISKE JUSTERINGER

Højde, tonehoved



Højde slettehoved justering foretages med justereværktøj 1 og 2 fra justereværktøjssæt 3624020.

Justerværktøj lægges i kassetteholderen som vist.

Tonehovedbroen presses forsigtigt ind mod værktøj 2.

Med skruen A justeres til båndstyret går ind over værktøj 2.

Højden på tonehovedet kontrolleres ligeledes med værktøj 2.

Der kan korrigeres for højdefejl v.h.a. skiven under opspændingerne til hovederne.

Følgende skiver kan benyttes:

2624052	0,1 mm
2624053	0,2 mm
2624054	0,3 mm

Frigang trykrulle

Tonehovedbroen trykkes i bund.

Afstanden mellem tappen A på tonehovedbroen og trykrullearmen skal da være ca. 0,5 mm.

Justering foretages ved at bukke tappen A.

MECHANICAL ADJUSTMENTS

Height, Tape Heads

Erase head adjustments are made by means of the adjustment tools 1 and 2 of the adjustment tool kit 3624020.

Place the adjustment tool in the cassette holder as shown.

Press the tape head bridge carefully until it touches tool 2.

Adjust with the screw A until the tape guide just starts to cover tool 2.

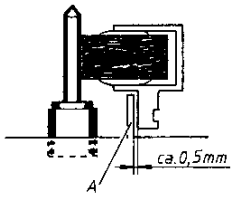
The tape head height is also controlled with tool 2.

Height displacements can be rectified by means of the washer under the head fixtures.

The following washers can be used:

2624052	0.1 mm
2624053	0.2 mm
2624054	0.3 mm

Thrust Roller Clearance



Press the tape head bridge until it bottoms.

The clearance between the pin A on the tape head bridge and the thrust roller arm should now be approx. 0.5 mm.

Make this adjustment by bending the pin A.

Smøring

Behovet for eftersmøring er minimalt, men ved større eftersyn og ved udskiftning af vigtige mekaniske dele, bør disse retningslinier følges.

Lubrication

The need for lubrication is negligibible, but the directions given below should be followed during overhauls and when replacing major mechanical components.

Tonehovedbro 22012: Glideflader mod tappe i topchassis, vinkel 22013 og kugle 22025. Kobling 22060: Glideflade mod vinkel 22066 og vinkel 22064. Kurvehjul 22097 og 22104: Glideflade mod aksel i topchassis.	Tape head bridge 22010: Fase slidings against taps in top chassis, bracket 22013 and ball 22025. Clutch 22060: Fase sliding against bracket 22066 and bracket 22064. Cam lifting wheel 22097 and 22104: Fase sliding against shaft in top chassis.	3984216 Rocol MTS 1000
Trykrulle 22020: Glideflade mod aksel. Svinghjul 22122: Glideflade mod bundleje 22124.	Pressure wheel 22020: Fase sliding against shaft. Flywheel 22122: Fase sliding against bottom bearing 22124.	3984021 Eprohon grease
Spoletallerkener 22034 og 22048: Glideflader mod aksler i topchassis og og ring 22036. Berøringsflader mellem aksel 22029, vinkel 22044 og vinkel 22043.	Shafts for turntables 22034 and 22048: Fase slidings against shafts in top chassis and ring 22036. Surfaces of contact between shaft 22029, bracket 22044 and bracket 22043.	3984022 Floil GB-TS-1

ELEKTRISKE JUSTERINGER

Henvisningerne er for højre kanal, (Henvisningerne i parantes er for venstre kanal).

Elektriske justeringer foretages uden DOLBY NR.

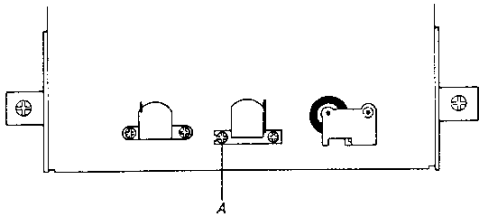
Ved brug af tonegenerator skal denne tilsluttes signalkablets DIN stik. Det skal bemærkes at ved brug af tonegenerator som giver signal ud på alle fire ben i DIN-stikket, kan dette give fejlmålinger i gengive positionen, hvis ikke tonegeneratoren afbrydes.

Azimut

Tonehoved og slettehoved afmagnetiseres.

De to Y indgange på et oscilloscop tilsluttes henholdsvis 1TP7 og 1TP8.

Azimut bånd 6780036 ilægges.



Skruen A justeres til de to kurver på oscilloscopet er i medfase ved max. amplitude.

Gengiveniveau

Justering af gengiveniveau er her beskrevet efter to norm bånd.
1: DIN standard, 250 pWb/mm.
2: Dolby level, 200 pWb/mm.

1: Pegel bånd 6780035 ilægges.
LF voltmeter tilsluttes 1TP7 (1TP8).
1R243 (1R443) justeres til der måles 660 millivolt i 1TP7 (1TP8).

2: Dolby level calibration bånd MTT-150A ilægges.
LF voltmeter tilsluttes 1TP7 (1TP8).
1R243 (1R443) justeres til der måles 580 millivolt i 1TP7 (1TP8).

Hastighed

Før denne justering skal apparatet have været tændt i ca. 5 min.

Wow bånd 6780037 ilægges.

Wow meter tilsluttes 1TP7, eller DIN stik.

Med potentiometer B i motoren justeres til korrekt hastighed aflæst på wow meterets driftmeter.

Justeringen foretages midt på båndet.

ELECTRICAL ADJUSTMENTS

The references apply to the right-hand channel (references in parentheses apply to the left-hand channel).

Make electrical adjustments without DOLBY NR.

In case an audio oscillator is used, it must be connected to the DIN plug of the signal cable. It should be noted that if an audio oscillator is used which outputs signals on all four DIN plug pins, this may result in erroneous readings in playback mode if the audio oscillator is not disconnected.

Azimuth

Degauss tape head and erase head.

Connect the two Y-inputs of an oscilloscope to 1TP7 and 1TP8 respectively.

Load azimuth tape 6780036.

With screw A adjust for inphase relations of the two curves on the oscilloscope at max. amplitude.

Playback level

Playback level adjustment is explained below for two types of level tapes:
1: DIN standard, 250 pWB/mm
2: Dolby level, 200 pWB/mm

1: Load level tape 678005.
Connect an AF voltmeter to 1TP7 (1TP8).
Adjust 1R243 (1R443) until a reading of 660 mV is obtained in 1TP7 (1TP8).

2: Load Dolby level calibration tape MTT-150A.
Connect an AF voltmeter to 1TP7 (1TP8).
Adjust 1R243 (1R443) until a reading of 580 mV is obtained in 1TP7 (1TP8).

Speed

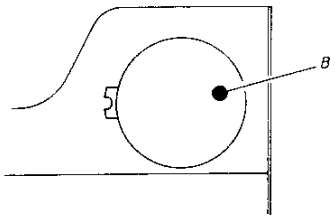
Prior to this adjustment, it is a requirement that the tape recorder has been ON for approx. 5 minutes.

Load wow tape 6780037.

Connect wowmeter to 1TP7, or DIN plug.

Adjust, with the motor potentiometer B, until the correct speed is read on the driftmeter of the wowmeter.

Make this adjustment in a mid-tape position.



Optagehæv

Tonegenerator indstilles til at afgive 333 Hz i 1 volt området.

TAPE TYPE omskifteren stilles i FE.

LF voltmeter tilsluttes 1TP1 (1TP2).

Record pause aktiveres.

Record potentiometeret indstilles til der måles 400 millivolt i 1TP1 (1TP2).

Tonegeneratorens frekvens ændres til 10 kHz.

1L200 (1L400) justeres til der måles 950 millivolt i 1TP1 (1TP2)(svarende 7,5 dB hæv ved 10 kHz i forhold til 333 Hz).

Recording boost

Set an audio oscillator to output 333 Hz in the 1V range.

Set the TAPE TYPE switch in FE mode.

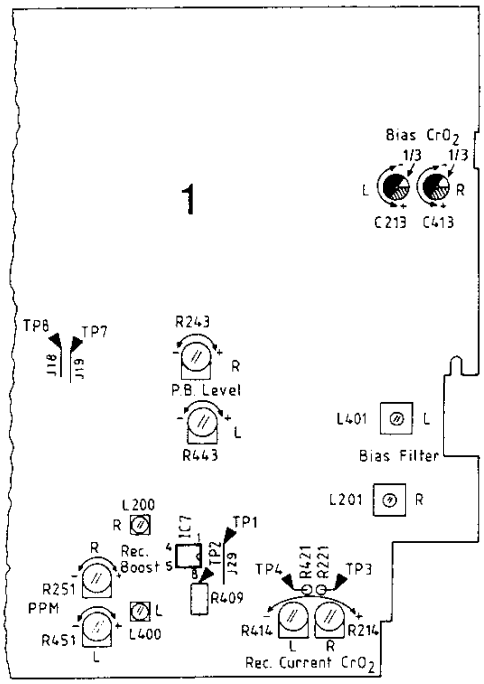
Connect an AF voltmeter to 1TP1 (1TP2).

Activate record pause.

Adjust the recording potentiometer until a reading of 400 mV is obtained in 1TP1 (1TP2).

Alter the audio oscillator frequency to 10 kHz.

Adjust 1L200 (1L400) until a reading of 950 mV is obtained in 1TP1 (1TP2) (which corresponds to a boost of 7.5 dB at 10 kHz as compared with 333 Hz).



FOR SERVICE MANUALS CONTACT:

Biasfilter

LF voltmeter tilsluttes 1TP3 (1TP4).

Record pause aktiveres.

1L201 (1L401) justeres til minimum spænding i 1TP3 (1TP4).

Bias filter

Connect an AF voltmeter to 1TP3 (1TP4).

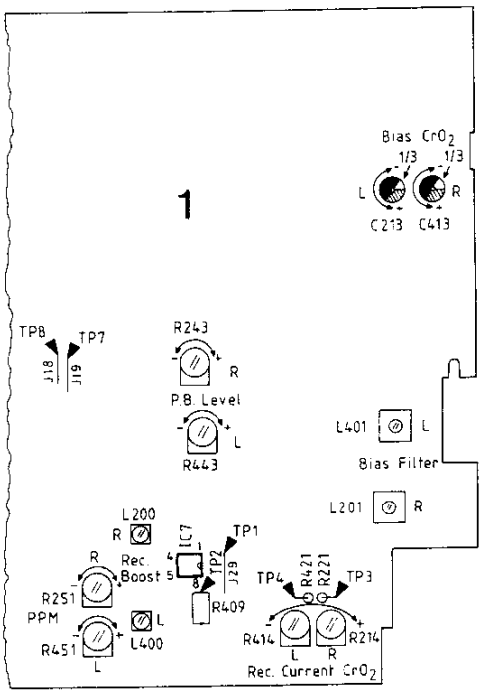
Activate record pause.

Adjust 1L201 (1L401) until min. voltage is obtained in 1TP3 (1TP4).

Bias og optagestrøm CrO_2

TAPE TYPE omskifteren stilles i CR.

CrO_2 norm bånd 6780066 ilægges.
1R214 (1R414) 2R12 og 2R14 stilles i midterstilling, og 1C213 (1C413) indstilles til 1/3 opdrejet.



Optagestrøm

Tonegenerator indstilles til at afgive 333 Hz i 1 volt området.

LF voltmeter tilsluttes 2TP5 (2TP6).

Record pause aktiveres.

Record potentiometeret indstilles til der måles 200 millivolt i 2TP5 (2TP6).

LF voltmeter tilsluttes 1TP7 (1TP8).

Ved henholdsvis at optage og gengive justeres 1R214 (1R414) til der måles 200 millivolt i 1TP7 (1TP8).

Bias

Tonegenerator indstilles til at afgive 333 Hz i 100 millivolt området.

LF voltmeter tilsluttes 1TP7 (1TP8).

Record potentiometeret indstilles til der måles ca. 20 millivolt i 1TP7 (1TP8).

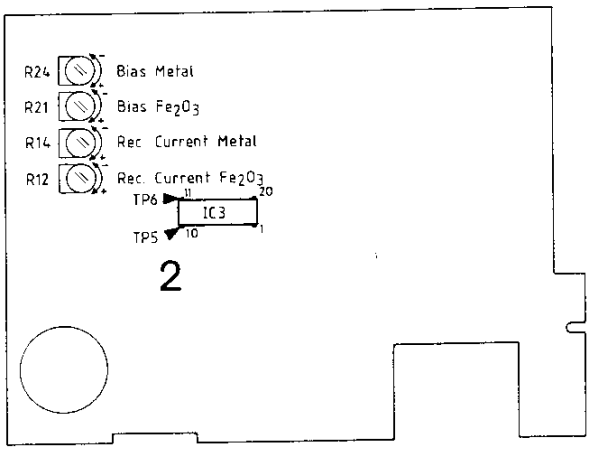
Ved henholdsvis at optage og gengive 333 Hz og 15 kHz,justeres 1C213 (1C413) til samme niveau under gengiveved 15 kHz som ved 333 Hz målt i 1TP7 (1TP8).
(Mindre bias giver diskant hæv. Mere bias giver diskant fald).

Optagestrøm kontrolleres.

Bias and recording current CrO_2

Set the TAPE TYPE switch in CR mode.

Load CrO_2 level tape 6780066.
Set 1R214 (1R414), 2R12 and 2R14 in their mid positions and adjust 1C213 (1C413) until it is 1/3 turned up.



Record current

Set an audio oscillator to output 333 Hz in the 1 V range.

Connect an AF voltmeter to 2TP5 (2TP6).

Activate record pause.

Adjust the record potentiometer until a reading of 200 mV is obtained in 2TP5 (2TP6).

Connect an AF voltmeter to 1TP7 (1TP8).

Adjust, while recording and playing back respectively, 1R214 (1R414) until a reading of 200 mV is obtained in 1TP7 (1TP8).

Bias

Set an audio oscillator to output 333 Hz in the 1 V range.

Connect an AF voltmeter to 1TP7 (1TP8).

Adjust the record potentiometer until a reading of approx. 20 mV is obtained in 1TP7 (1TP8).

Adjust, while recording and playing back 333 Hz and 15 kHz respectively, 1C213 (1C413) to the same level during playing back at 15 kHz as for 333 Hz when measured in 1TP7 (1TP8).
(Less bias will result in treble boost. More bias will result in treble cut.)

Check recording current.

Bias Fe_2O_3
TAPE TYPE omskifteren stilles i FE.

CrO_2 bias skal være justeret, og tonegenerator og record potentiometer skal have samme indstilling som ved CrO_2 bias.

Fe_2O_3 norm bånd 6780067 ilægges.

Ved henholdsvis at optage og gengive 333 Hz og 15 kHz, justeres 2R21 til samme niveau under gengive ved 15 kHz som ved 333 Hz målt med LF voltmeter i 1TP7.

Bias METAL
TAPE TYPE omskifteren stilles i METAL.

CrO_2 bias **skal** være justeret, og tonegenerator og record potentiometer skal have samme indstilling som ved CrO_2 bias.

Metal norm bånd 6780085 ilægges.

Ved henholdsvis at optage og gengive 333 Hz og 15 kHz, justeres 2R24 til samme niveau under gengive ved 15 kHz som ved 333 Hz målt med LF voltmeter i 1TP7.

Optagestrøm Fe_2O_3
CrO_2 bias og optagestrøm skal være justeret.

TAPE TYPE omskifteren stilles i FE.

Fe_2O_3 norm bånd 6780067 ilægges.

Tonegenerator indstilles til at afgive 333 Hz i 1 volt området.

Record potentiometeret indstilles til der måles 200 millivolt med LF voltmeter i 2TP5.

LF voltmeter tilsluttes 1TP7.

Ved henholdsvis at optage og gengive justeres 2R12 til der måles 200 millivolt i 1TP7.

Optagestrøm METAL
CrO_2 bias og optagestrøm skal være justeret.

TAPE TYPE omskifteren stilles i METAL.

METAL norm bånd 6780085 ilægges.

Tonegenerator og optagepotentiometer skal have samme indstilling som ved Fe_2O_3 optagestrøm.

Ved henholdsvis at optage og gengive justeres 2R14 til der måles 200 millivolt med LF voltmeter i 1TP7.

Bias Fe_2O_3 og metal kontrolleres.

Bias Fe_2O_3
Set the TAPE TYPE switch in FE mode.

The CrO_2 bias **must** have been adjusted and the audio oscillator and record potentiometer shall have the same settings as for CrO_2 bias.

Load Fe_2O_3 level tape 6780067.

Adjust, while recording and playing back 333 Hz and 15 kHz respectively, 2R21 to the same level during playing back at 15 kHz as for 333 Hz when measured with an AF voltmeter in 1TP7.

Bias METAL
Set the TAPE TYPE switch in METAL mode.

The CrO_2 bias **must** have been adjusted and the audio oscillator and record potentiometer shall have the same settings as for CrO_2 bias.

Load METAL level tape 6780085.

Adjust, while recording and playing back 333 Hz and 15 kHz respectively, 2R24 to the same level during playing back at 15 kHz as for 333 Hz when measured with an AF voltmeter in 1TP7.

Recording current Fe_2O_3
The CrO_2 bias and recording current shall have been adjusted.

Set the TAPE TYPE switch in FE mode.

Load Fe_2O_3 level tape 6780067.

Set an audio oscillator to output 333 Hz in the 1 V range.

Adjust the record potentiometer until a reading of 200 mV is obtained in 2TP5.

Connect an AF voltmeter in 1TP7.

Adjust, while recording and playing back respectively, 2R12 until a reading of 200 mV is obtained in 1TP7.

Recording current METAL
The CrO_2 bias and recording current shall have been adjusted.

Set the TAPE TYPE switch in METAL mode.

Load METAL level tape 6780085.

The audio oscillator and the recording potentiometer shall have the same settings as for Fe_2O_3 recording current.

Adjust, while simultaneously recording and playing back, 2R14 until a reading of 200 mV is obtained with a voltmeter in 1TP7.

Check bias of Fe_2O_3 and METAL.

PPM

Tonegenerator tilsluttes båndoptagerindgangen på højre kanal og indstilles til at afgive 333 Hz i 1 volt området.

Record pause aktiveres.

Record potentiometeret indstilles til der måles 660 millivolt i 2TP5.

Med 1R251 justeres til den første røde lysdiode netop tænder (+2dB).

Justeringen for venstre kanal er identisk med højre, blot måles der i 2TP6 og justeres i 2R451.

PPM

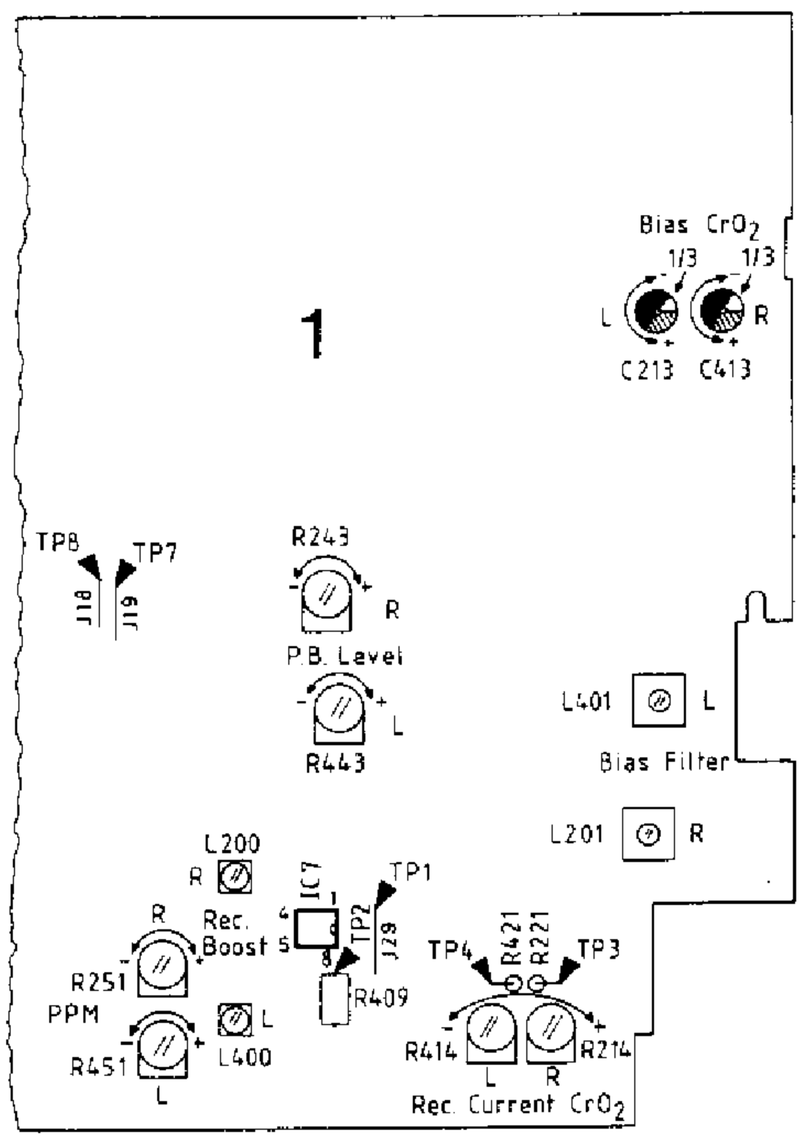
Connect an audio oscillator to the tape recorder input on the left-hand channel and set it to output 333 Hz in the 1 V range.

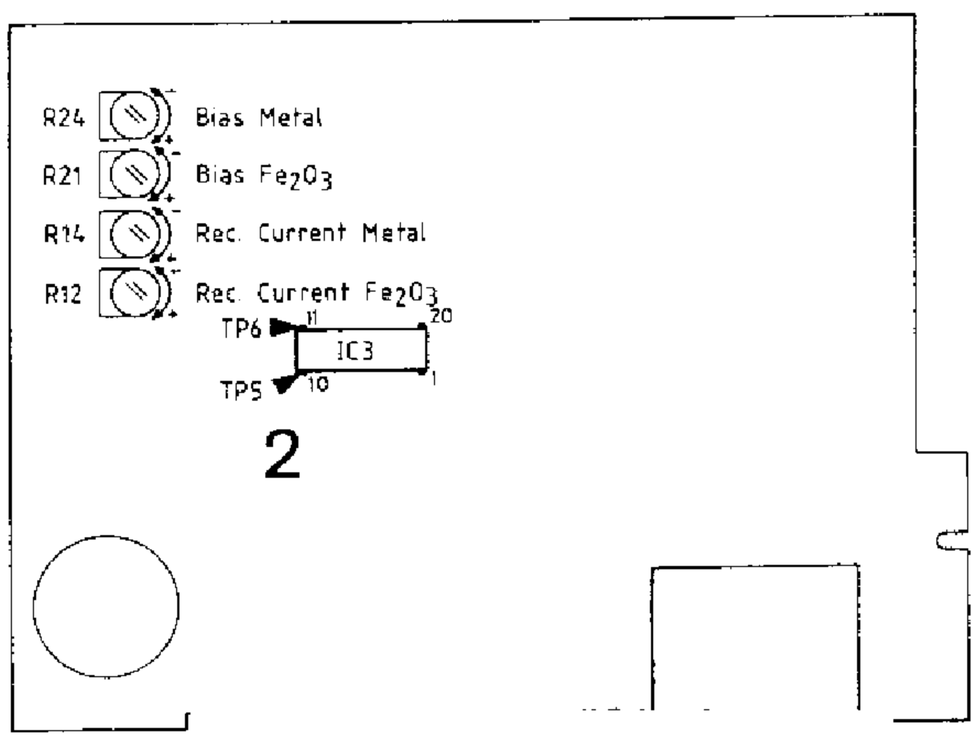
Activate record pause.

Adjust the record potentiometer until a reading of 660 mV is obtained in 2TP5.

Adjust 1R251 until the first red LED starts to glow (+2 dB).

The adjustment for the left-hand channel is identical with that of the right-hand channel, inasmuch as the only difference is that the measurement is made in 1TP6 and 2R451 is to be adjusted.





K3 forvrængning

Ved visse fejl i en båndoptager kan biasjusteringen korrigeres, således at optage/gengive frekvensgangen er korrekt men forvrængningen er for høj. Dette kan kontrolleres ved at måle forvrængningen af den 3. harmoniske af 333 Hz(K_3 distortion). Målingen kan foretages v.h.a. måleinstrumentet DM1 (Bang & Olufsen).

K_3 forvrængningen skal måles med DM1 tilsluttet båndoptager indgangen.
(Output switch på DM1 i stilling HI).

Record pause aktiveres.

Record potentiometeret indstilles til der måles 660 millivolt i 2TP5 (2TP6).

Målingerne foretages med det i biasjusteringen nævnte normbånd.

K_3 skal for CrO_2 være lavere end 3%.

K3 distortion

In certain tape recorder fault situations the bias adjustment is corrigible in such a way that the recording/playing back frequency characteristics are correct while the distortion is too high. This is checkable by measuring the 3rd harmonic of 333 Hz (K_3 distortion). The measurement can be made by means of the meter instrument DM1 (Bang & Olufsen).

The K_3 distortion must be measured with DM1 connected to the tape recorder input.
(Output switch on DM1 in HI position).

Activate record pause.

Adjust the record potentiometer until a reading of 660 mV is obtained in 2TP5 (2TP6).

Make this adjustment with the level tape mentioned under bias adjustment.

For CrO_2 the K_3 must be less than 3%.

TECHNICAL SPECIFICATIONS

Compact Cassette	C46-C60-C90-C120
Noise reduction system	Dolby B
Tape switch	Manual ferro/chrom/metal
Tape head	M&X
Wow and flutter DIN	$< \pm 0.2\%$
Wow and flutter WRMS	$< 0.08\%$
Speed deviation	$< \pm 1.5\%$
Fast forward and rewind	100 sec.
Frequency range chrom	30-15,000 Hz ±3 dB

Signal-to-noise ratio CCIR/ARM:

Metal Dolby B	> 64 dB TDK-MA
Chrom Dolby B	> 65 dB TDK-SA
Ferro Dolby B	> 63 dB BASF LH I

Signal-to-noise ratio IEC/DIN:

Metal	> 56 dB TDK-MA
Chrom	> 56 dB TDK-SA
Ferro	> 55 dB BASF LH I
Distortion ferro	< 2%
Channel separation	> 35 dB
Erasure	> 70 dB
Erasure frequency	85 kHz
Radio input, LINE	40 mV / 22 kΩ
Radio output	660 mV / 100 Ω
Power supply	220 volts
Power frequency	50 - 60 Hz
Power consumption	Max. 20 watts
Dimensions W x H x D	42 x 7 x 24.5 cm
Weight	3.8 kg

Subject to change without notice

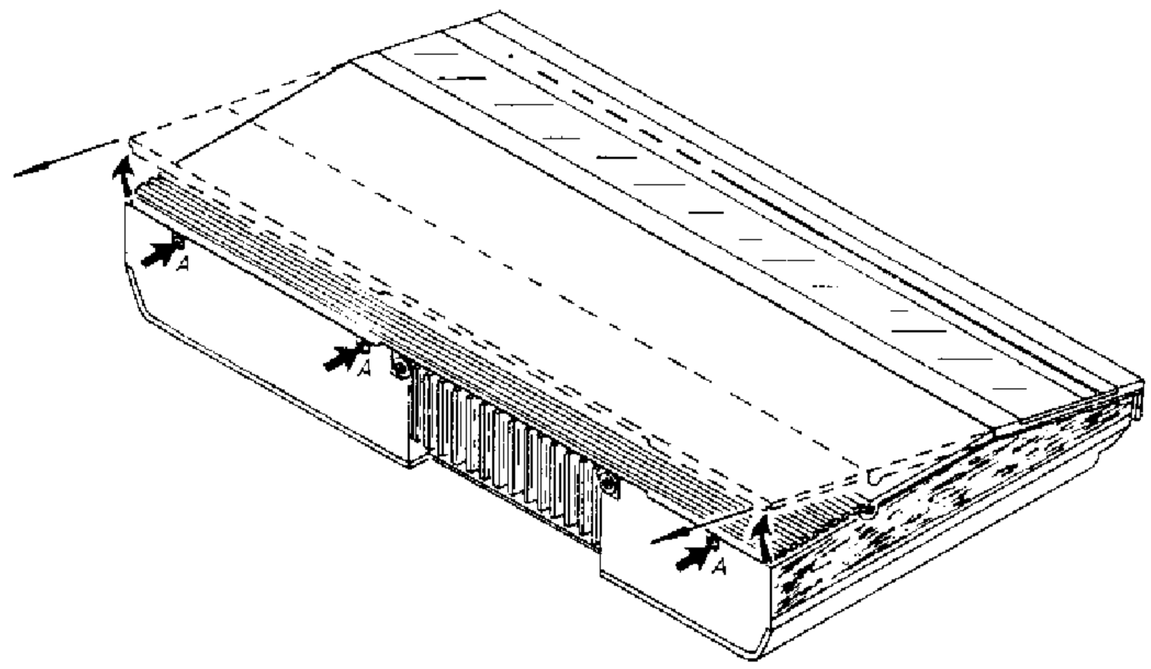
Bang&Olufsen

ADSKILLELSE

Toppanel med låg

DISASSEMBLY

Top panel with cover



Skruerne A i bagkanten løsnes.

Ved at løfte toppaneletes bagkant ca. 30 mm og trække bagud, frigøres den fra betjeningspanelet.

Ved samling, kontrolleres at alle knapper er påsat og Rec. Level skyder er i indgreb.

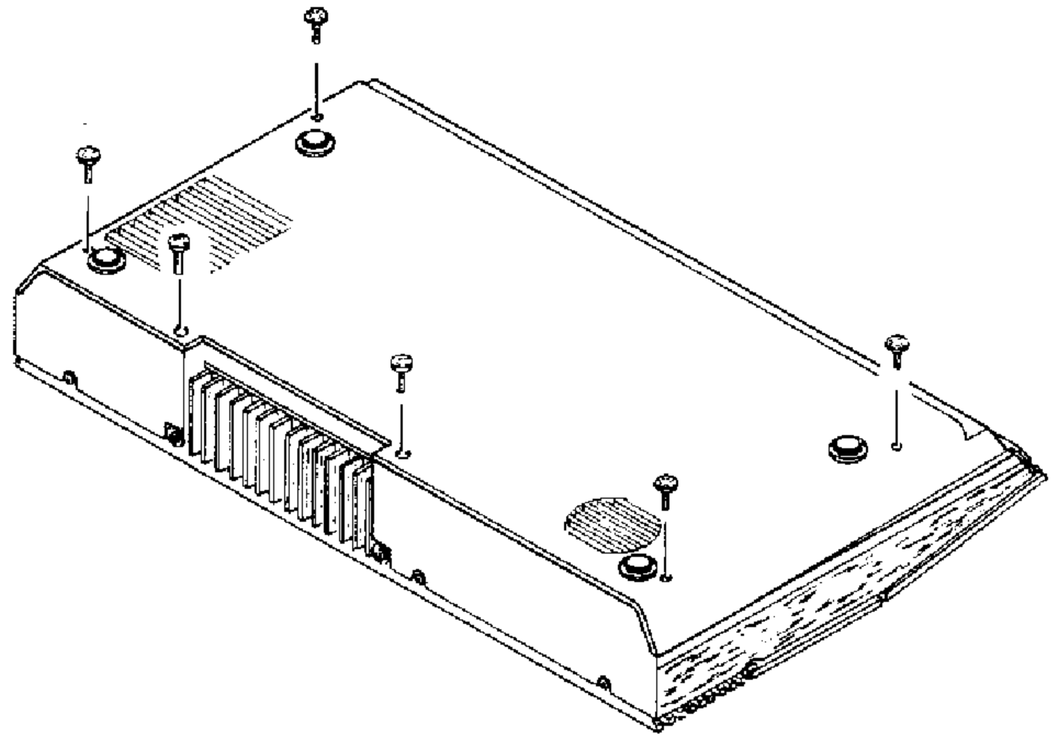
Loosen the rear screws A.

Lift of the top panel rear edge approx. 30 mm and pull it rearwards. This will release the former from the operating panel.

On reassembly, check that all buttons have been put back and that Rec. Level slide is meshing.

Bundplade

Bottom



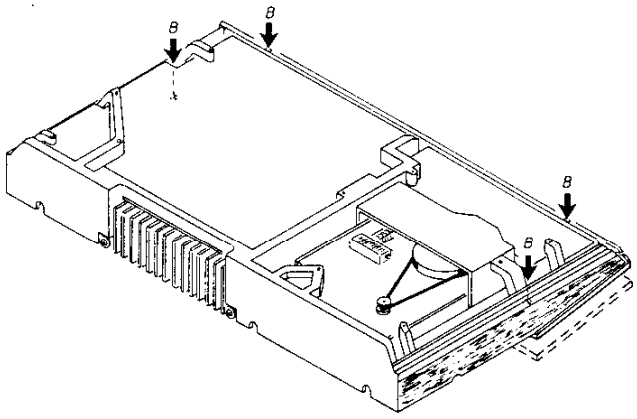
Skruerne i bunden afmonteres.

Bunden kan nu aftages.

Remove the bottom screws.

The bottom plate is now removable.

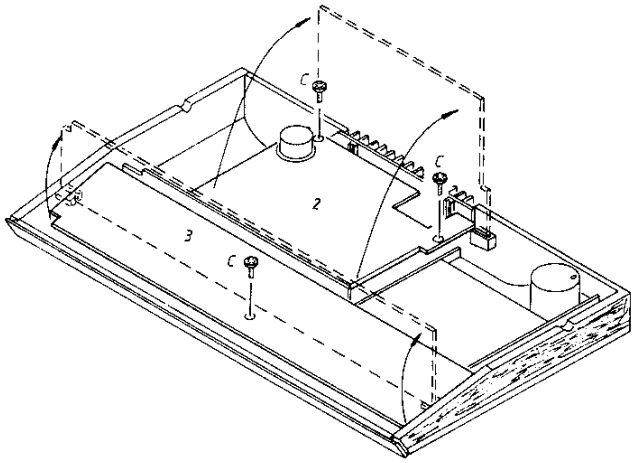
Betjeningspanel



De fire skruer B afmonteres.

Pas på ikke at ødelægge kontaktfjedrene.

PCB 2 - PCB 3



De tre skruer C afmonteres.

PCB 2 og PCB 3 kan nu placeres i service stilling.

Operating panel

Remove the 4 screws B.

Take care not to destroy the contact springs.

PCB 2 - PCB 3

Remove the 3 screws C.

PCB 2 and PCB 3 can now be placed in their servicing positions.

ISOLATIONSTEST

Ethvert apparat **skal** isolationstestes efter at det har været adskilt. Testen udføres når apparatet igen er helt samlet og klar til udlevering til kunden.

Isolationstesten udføres på følgende måde:
De to stikben på netstikket kortsluttes og tilsluttes en af terminalerne på isolationstesteren. Den anden terminal fra isolationstesteren tilsluttes ben 2 i signalkabelstikket.

OBS!
For at undgå beskadigelser på apparatet er det vigtigt, at begge terminaler fra isolationstesteren har virkelig god mekanisk kontakt.

Der drejes nu langsomt med spændingsreguleringen på isolationstesteren indtil en spænding på 1,5-2 kV er opnået. Her skal den holdes i 1 sekund, derefter drejes der langsomt ned for spændingen igen.

Der må ikke på noget tidspunkt under testen forekomme overslag.

INSULATION TEST

Each set **must** be insulation tested after dismantling. The test is to be performed when the set has been reassembled and is ready for delivery to the customer.

Make the insulation test as follows: – Short-circuit the two plug pins of the mains plug and connect one of the terminals of the insulation tester. Connect the other terminal of the insulation tester to pin 2 of the signal cable plug.

N.B.!
To avoid ruining the set, it is essential that both insulator test terminals are in really good mechanical contact.

Now turn slowly the voltage control of the insulation tester until a voltage of 1.5-2 kV is obtained. Hold it there for 1 second, then turn slowly the voltage down again.

At no point during the testing procedure any flashovers are permissible.

SERVICETIPS/MODIFIKATIONER

Tilslutning af Beocord 2000 til Beomaster 1900, 1900-2, 2300, 2400 og 2400-2, type 2901, 2903 og 2905.

Såfremt Beocord 2000 ønskes tilsluttet et af ovennævnte produkter, skal der foretages en mindre modifikation i Beomasteren, idet båndoptagertilslutningen skal ændres fra DIN til LINE niveau.

Modifikationen kan udføres ved at aftage apparatets bundplade, afbryde kobberbanen ved A (begge kanaler) og forbinde punkterne B og C (begge kanaler), med en isoleret ledning.

Af hensyn til højdetilpasning mellem ovennævnte Beomastere og Beocord 2000, skal Beomasteren forsynes med højere glidesko. Disse glidesko leveres i sæt på fire, under index nr. 3390226.

Da Beocord 2000 er forsynet med et 7-polet DIN stik, skal de to yderste stikben aftages, før stikket kan sættes i Beomasteren.

Demontering af stikforbindelse til tonehovede.

Såfremt stikforbindelse til tonehovede ønskes aftaget, kan øverste del af skærm bøjes op i lodret stilling.

(Husk at bøje skærmen tilbage igen, efter montering af stik).

Ophængning på væg:

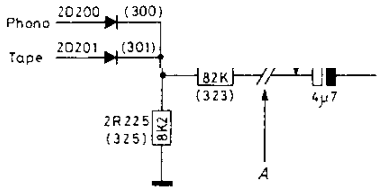
Skruesæt med boreskabelon, skruer og rawlplugs, kan leveres under index nr. 3390225.
Sættet indeholder materialer for ophængning af både Beocord og Beomaster 2000.

SERVICE TIPS/MODIFICATIONS

Connection of Beocord 2000 to Beomaster 1900, 1900-2, 2300, 2400 and 2400-2, Types 2901, 2903 and 2905

If you wish to connect a Beocord 2000 to one of the above mentioned Beomasters it will be necessary to make a minor modification in the Beomaster inasmuch as the tape recorder connection must be altered from DIN to LINE level.

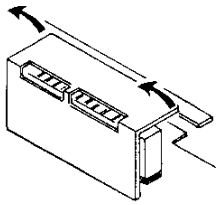
This modification can be implemented by removing the bottom plate of the Beomasters, disconnect the copper path at A (both channels) and connect the points B and C (both channels) by a piece of insulated wire.



In order to adapt to each other, heigthwise, the above Beomaster and Beocord 2000, the Beomaster must be furnished with higher sliding shoes. Such sliding shoes are available in sets of 4, under Index No. 3390226.

Since Beocord 2000 has a 7-pole DIN socket, the two outermost pins must be removed prior to inserting the plug into the Beomaster.

Disassembly of plug connection to the tapehead



If it becomes necessary to remove the plug connection to the tapehead the top of the guard can be bent vertically upwards.

(Remember to bend the guard back down again after refitting of the plug.)

Wall mounting:

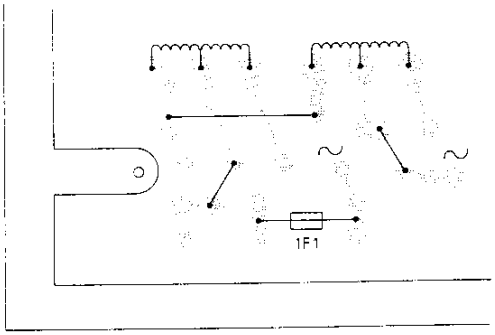
Set of screws, complete with drilling template, screws and rawlplugs, is available under Index No. 3390225.
The set is complete with all material for wall mounting of both Beocord and Beomaster 2000.

Oversigt over ledningsmontering på nettransformatorer:

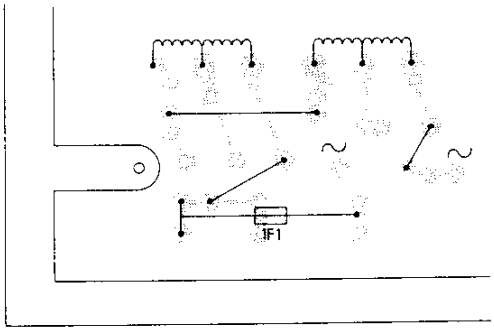
Survey of wire mounting in mains transformers:

8013312

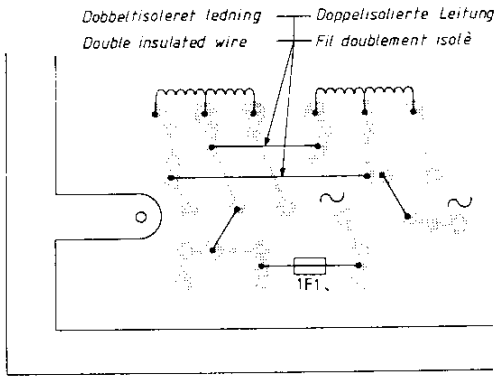
220 V (Type 2921)
1F1 = 200 mA Slow (250 V – IEC 127) Bang & Olufsen 6600037



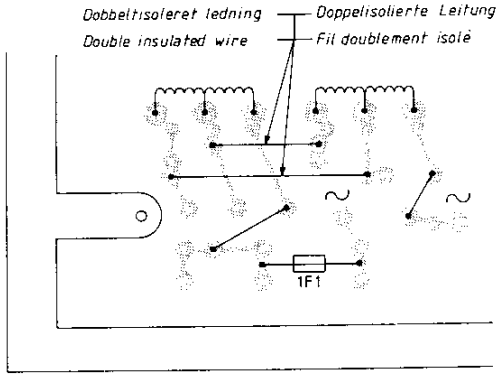
240 V (Type 2922-2925)
1F1 = 200 mA Slow (250 V – IEC 127) Bang & Olufsen 6600037



110 V
1F1 = 400 mA Slow (250 V – IEC 127) Bang & Olufsen 6600015



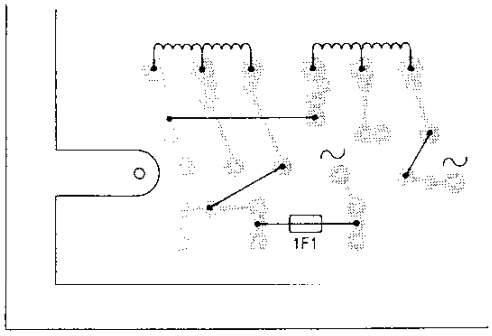
130 V
1F1 = 315 mA Slow (250 V – IEC 127) Bang & Olufsen 6600028



8013313

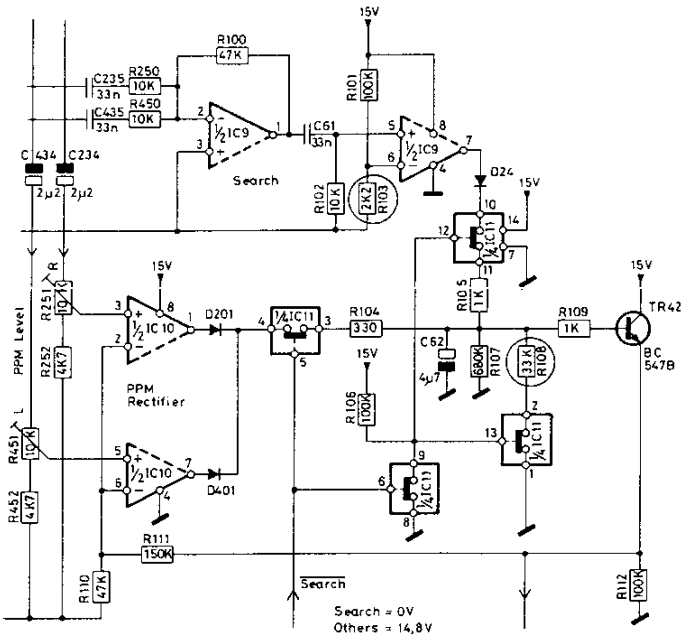
120 V (Type 2923)

1F1 = 250 mA Alow (UL)
Bang & Olufsen 6600032



Musik søgesystem

Music Search System



Musiksøgesystemet (NEXT og RETURN) føler på pauser mellem musikstykkerne således at det er pausens længde, og niveau som er bestemmende for om søgesystemet opfanger pausen.
Der kan ændres i det fra fabrikken fastlagte pause tid og niveau forhold, som søgesystemet kan opfange ved at ændre værdi på henholdsvis 1R108 og 1R103:

1R108 lavere værdi = stop ved kortere pauser.
1R108 højere værdi = stop ved længere pauser.

1R103 lavere værdi = stop ved lavere pause niveau.
1R103 højere værdi = stop ved højere pause niveau.

The music search system (NEXT and RETURN) senses intervals between the musical pieces, which means that the duration and level of the intervals will determine whether the search system catches same. The relation between duration and level of the interval set by the factory, which the search system will catch may be altered by altering values of 1R108 and 1R103 respectively:

1R108 lower value = stop at shorter intervals
1R108 higher value = stop at longer intervals

1R103 lower value = stop at lower interval level
1R103 higher value = stop at higher interval level

»Blob« lyde ved afspilning af tomt bånd

I de først producerede apparater kunne der forekomme svage »blob« eller kliklyde i højttalerne ved afspilning af et tomt bånd.
(Sandsynligheden for fejl er størst i stilling FE).
Problemet er løst ved en ændring af stelvejene i print lay-out.
Såfremt problemet konstateres under service, kan det afhjælpes ved nedenstående modifikation på PCB1:

fra -900 mV til -1150 mV = 5,6 kΩ
fra -1150 mV til -1425 mV = 3,9 kΩ

Positiv offset spænding

Modstand forbindes parallelt med 1R217 (1R417)

fra 0 V til 300 mV = 18 kΩ
fra 300 mV til 600 mV = 8,2 kΩ
fra 600 mV til 900 mV = 5,6 kΩ
fra 900 mV til 1200 mV = 3,9 kΩ
fra 1200 mV til 1500 mV = 2,7 kΩ

»Blob« sounds at replay of empty tape

In the products first manufactured weak »blob« or click sounds may occur in the loudspeakers at replay of an empty tape.
(The probability for faults are biggest in pos. FE.)
The problem is solved by modification of the chassis ways in print lay-out.
In case the problem occurs in service, it may be remedied by the by the following modification of

from -900 mV to -1150 mV = 5.6 kΩ
from -1150 mV to -1425 mV = 3.9 kΩ

Positive offset voltage

Resistor is connected in parallel with 1R217 (1R417)

from 0 V to 300 mV = 18 kΩ
from 300 mV to 600 mV = 8.2 kΩ
from 600 mV to 900 mV = 5.6 kΩ
from 900 mV to 1200 mV = 3.9 kΩ
from 1200 mV to 1500 mV = 2.7 kΩ

FAX: 01844 - 352554

Udskiftning af 1IC8

Efter udskiftning af 1IC8 skal offset spændingen på ben 12 (5) måles, (Reference: 1TR41 emitter).
Der skal anvendes voltmeter med indre modstand >10 MΩ.
Såfremt offset spændingen er større end 0 V eller mindre end -300 mV skal der foretages korrektion ved at forbinde en modstand parallelt med 1R217 (1R417) eller 1R218 (1R418).
Værdien af denne modstand kan ses i nedenstående tabel.
Såfremt der allerede er monteret parallelle modstande, fjernes disse først.

Negativ offset spænding

Modstand forbindes parallelt med 1R218 (1R418)

fra -300 mV til -600 mV = 18 kΩ
fra -600 mV til -900 mV = 8,2 kΩ

Replacement of 1IC8

After replacement of 1IC8 the offset voltage on pin 12 (5) is measured (Reference: 1TR41 emitter).
Voltmeter with inner resistance >10 Mohm must be used.
If the offset voltage is larger than 0 V or less than -300 mV, correction must be made by connecting a resistor in parallel with 1R217 (1R417) or 1R218 (1R418). Value of this resistor can be seen from the below table. If parallel resistors are already mounted, these are removed first.

Negative offset voltage

Resistor is connected in parallel with 1R218 (1R418)

from -300 mV to -600 mV = 18 kΩ
from -600 mV to -900 mV = 8.2 kΩ

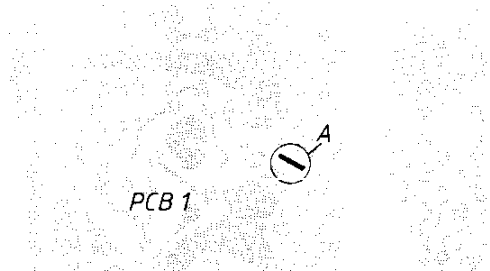
PCB1:

A. Print brydes.

B. Print kortsluttes.

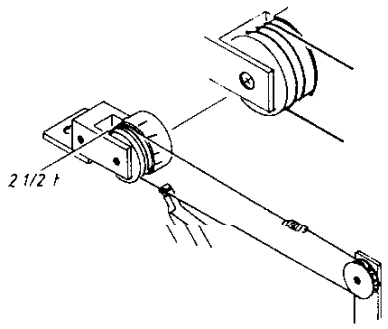
A. Print is broken.

B. Print is short circuited.



Snoretræk

Cord pulley



FAX: 01844 - 352554

Wow frekvenser/ Wow frequencies	Frekvens/ Frequency	Fejlkilde	Source of Failure	Pos. nr. Pos. no.
	0.37 Hz	Remskive	Pulley	22096
	1.17 Hz	Trykrulle	Thrust roller	22020
	2.7 Hz	Spoletallerkener (midt på bånd)	Supply reels (middle of tape)	22034/ 22048
	3 Hz	Rem	Belt	22065
	4.2 Hz	Rem	Belt	22123
	6 Hz	Svinghjul	Flywheel	22122
	9.6 Hz	Opsamlekobling	Take-up cluth	22061
	12.7 Hz	Remskive	Pulley	22109
	36.7 Hz	Remskive	Pulley	22141

Udskiftning af udløserarm for programlåg

Udskiftning af udløserarm, res. nr. 2853099 foregår lettest ved hjælp af en skævbider.

Med skævbideren presses omkring de to messingnitter, således at den skrå flade på skævbideren presser nitten op.

Efter udskiftning af udløserarmen, kan de to messingnitter igen presses på plads.

Replacement of release lever

Replacement of release lever, part no. 2853099, is preferably made by using a pair of side-cutting pliers.

The side-cutting pliers are pressed around the brass rivets, so that the skew side of the pliers press out the rivet.

After replacement of the release lever the brass rivets can be pressed back into place again.

95 kHz biasfrekvens

I de først producerede apparater er biasfrekvensen 95 kHz.

I disse apparater er 1C69 4100141 2,7 nF
1C212/412 4010081 270 pF

95 kHz bias frequency

In the sets first produced the bias frequency is 95 kHz.

In these sets 1C69 4100141 2.7 nF
1C212/412 4010081 270 pF